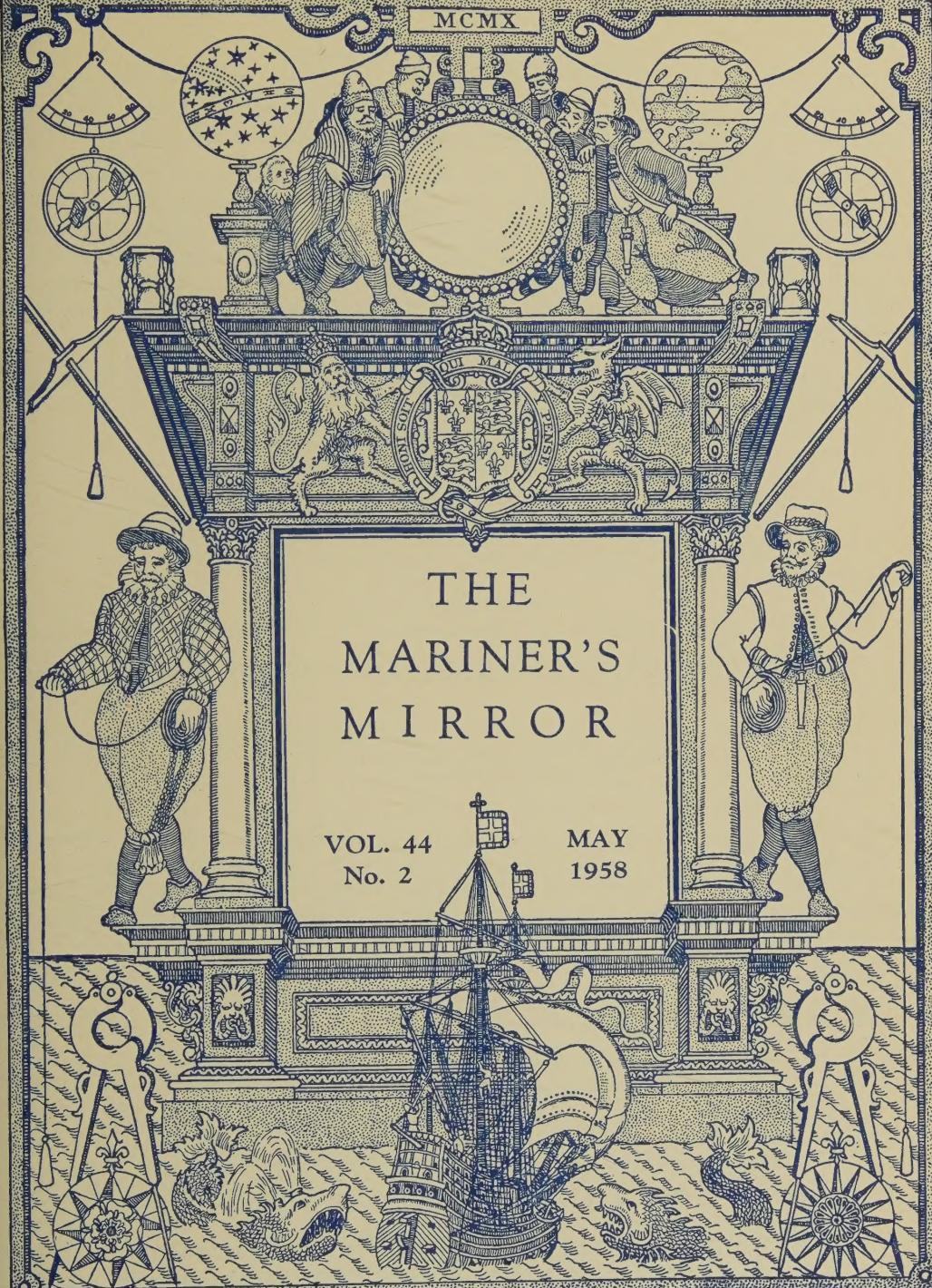


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THE
MARINER'S
MIRROR

VOL. 44
No. 2

MAY
1958

R.T. Gould del.

Ioannes a Doetecum inv. circa 1583

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To encourage research into nautical antiquities, into matters relating to seafaring and shipbuilding in all ages and among all nations, into the language and customs of the sea, and into other subjects of nautical interest.

The Society has erected a Monument to the Van de Veldes in St James's, Piccadilly, London; raised £107,000 to save Nelson's Flagship and has superintended the restoration of H.M.S. *Victory* to her appearance as at the Battle of Trafalgar; paved the way to the establishment of the National Maritime Museum at Greenwich and the *Victory* Museum at Portsmouth; organized exhibitions of Nelson relics and naval prints, etc.; and issued a number of periodical publications dealing with nautical archaeology, besides an inexpensive set of official plans (ten in number) for building a model of H.M.S. *Victory*.

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Names of ships should be underlined to denote *italics*, and not written within inverted commas.

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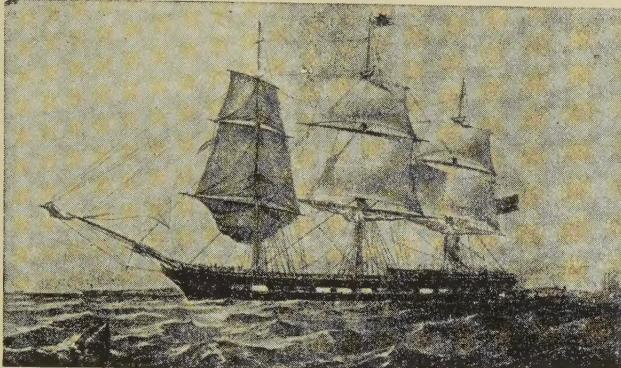
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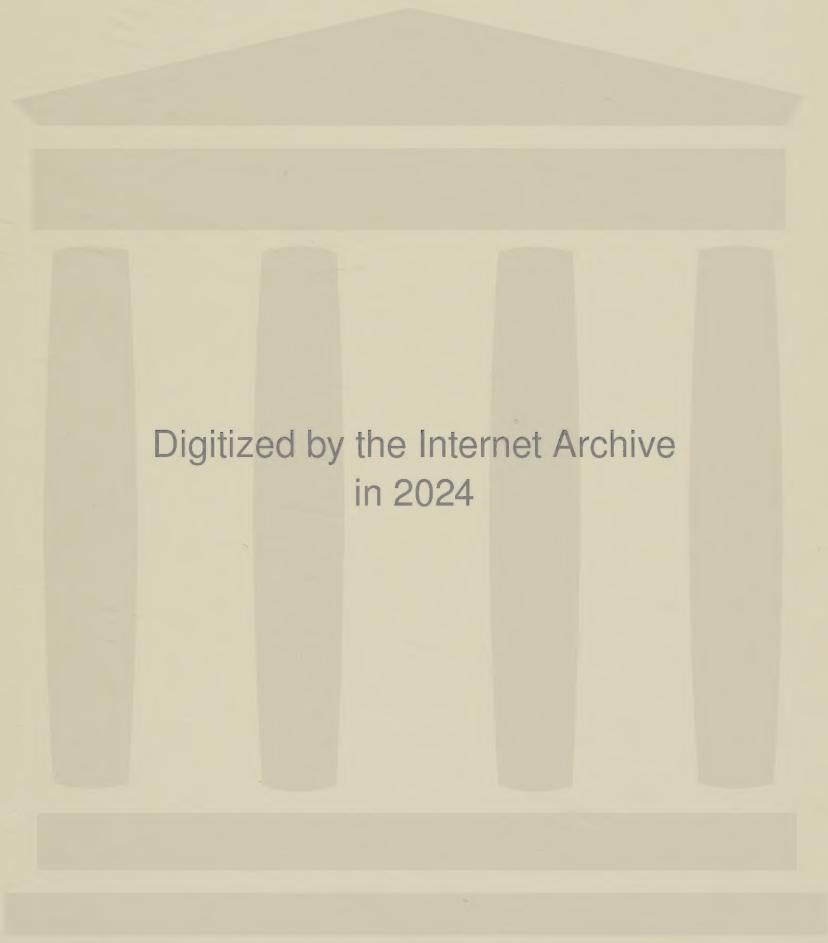


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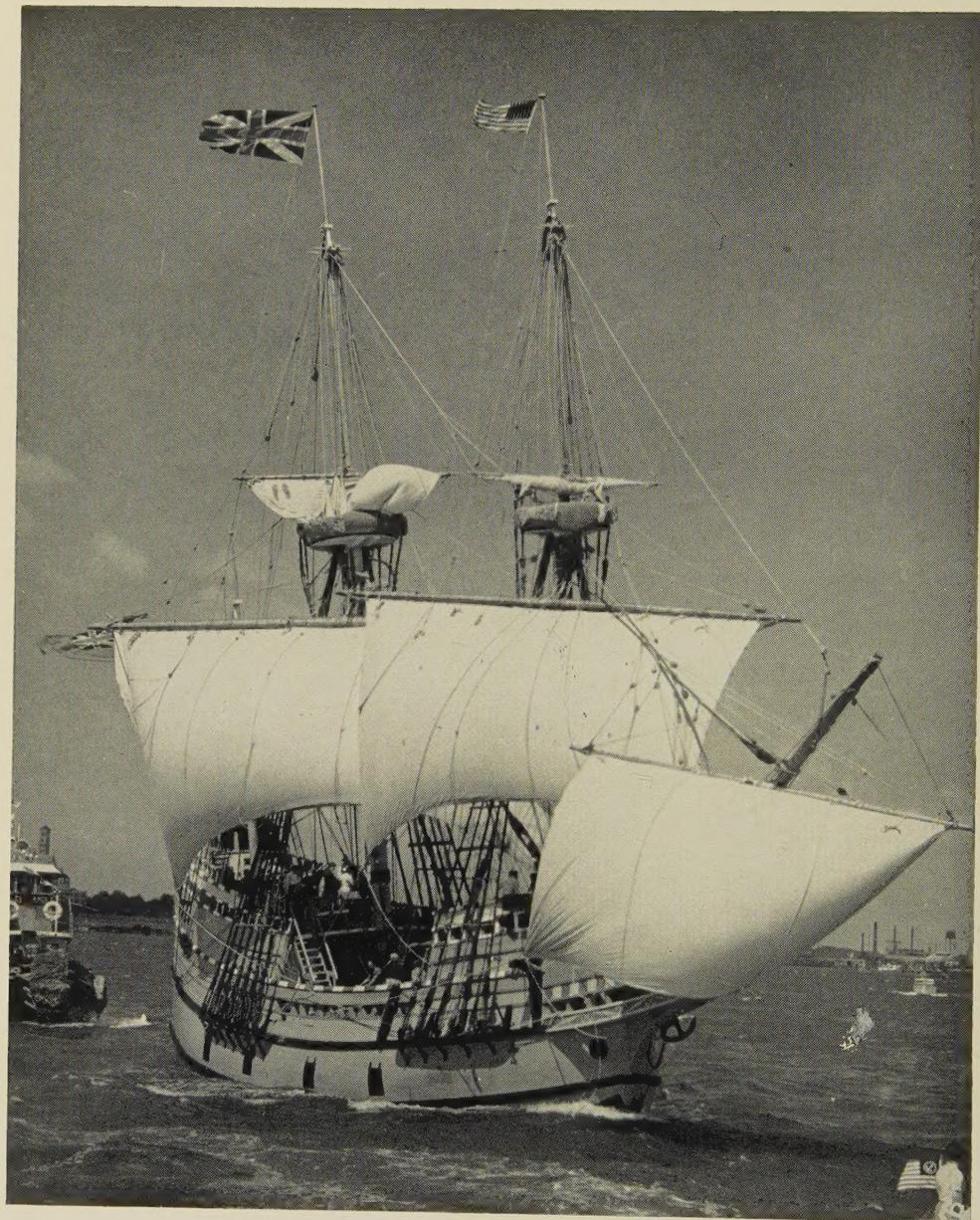
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Mayflower II. Arrival in New York Harbour, Monday, July 1, 1957

Sailing into the Hudson River under lowers, in a fresh breeze, July 1, 1957
By kind permission, Dept. of Marine & Aviation, New York City

(Frontispiece)

The MARINER'S MIRROR

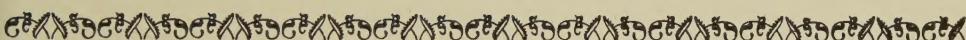
WHEREIN MAY BE DISCOVERED HIS
ART, CRAFT & MYSTERY

*after the manner of their
use in all ages and
among all
Nations*



VOL. 44. No. 2

1958



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EDITORIAL

Those readers of *The Mariner's Mirror* who may have had the time to skim through the pages of Dr Anderson's *Index* will doubtless have noticed that there are many gaps in our writings on Nautical Technology. In the sphere of Biography and Historical Research there is no such dearth, but field work on primitive craft has suffered much, during recent years, through the death of several of our notable authorities.

The boats of the Maoris, the birch bark canoes of the North American Indians, the woodskins of the Guianas, the boats of Indonesia, the dug-outs of West Africa and of the aborigines of Australia, to mention but a few, have received far less attention in the pages of *The Mariner's Mirror*, than that to which their importance entitles them.

The internal combustion engine, no less than the diesel, is altering the design of certain craft even of the most primordial variety; and so this premised, it follows that, unless steps are taken now to study them in their original form, it may be too late.

The study of primitive craft is, of course, one of the most important objects of the Society for Nautical Research; and therefore the Editor makes a most urgent appeal to all readers who may have knowledge of any of these or other ancient craft, or who may know of authorities who have such knowledge, for articles or notes on the subject. Scale plans are particularly important adjuncts.

Second only in importance to this is the desirability of increasing the circulation of *The Mariner's Mirror*. If only 50% of the members of the Society could each obtain one new member, the benefits that would accrue to all concerned would be phenomenal.

Finally, on a purely editorial side, contributors are particularly begged not to write in pencil or on what sometimes appears to be salvaged paper, and those authors whose handwriting is almost illegible would greatly assist the Editor by having their work typewritten. A further respectful suggestion would be that correspondents should include their names, not merely their initials, and perhaps their addresses on the last sheet of their manuscripts. Also, if it is not too much to ask, that the covering letter, if included, be quite separate from the copy which it is desired should go to the printers.

These matters may in themselves seem trivial, but are nevertheless of the greatest importance from the point of view of the Editor, whose purely mechanical clerical work is daily on the increase.

G. R. G. WORCESTER

THE SOCIETY'S ANNUAL LECTURE

THE Society's Annual Lecture for 1957, The Voyage of *Mayflower II*, was given on October 24 by Mr Alan Villiers, D.S.C.; and afterwards the Society entertained its guests to tea in the Museum Restaurant.

This was doubtless the most popular and certainly the best attended lecture which the Society has sponsored; indeed, on the day, so many people continued to arrive that they had at the last moment to be diverted from the lecture theatre of the National Maritime Museum to the palatial premises of the R.N. College nearby. Even here, with seating accommodation for over 400 persons, there was 'standing room only' well before the lecture commenced.

The speaker was introduced by the President of the Society for Nautical Research, Dr Anderson; and Mr Villiers in opening said:

The *Mayflower* 'replica' was designed by Mr William A. Baker, a naval architect living in Hingham, Mass., who had originally been commissioned to produce plans for a vessel of the famous *Mayflower*'s size and period for the philanthropic organization known as Plimoth Plantation, of Plymouth, Mass. The purpose of this organization, which was formed by a body of prominent New Englanders, was to create a sort of Williamsburg at Plymouth, with a rebuilt 'first plantation' off which a reconstruction of the *Mayflower* was to be at anchor. This organization had gone to considerable expense and trouble in the furtherance of its plans; and, when the London promoters of the *Mayflower* Project had approached them, they had made available Mr Baker's plans and agreed to provide a safe berth and adequate maintenance for the new vessel, which they were to receive as a gift. In this way the project was begun, and the necessary funds were raised by a limited company in London, called the *Mayflower* Project. Mr Villiers pointed out that he had nothing to do with this company or its plans and was concerned solely with getting a British crew together and sailing this British ship across the North Atlantic on what, from his point of view, was a simple delivery passage, towards Plymouth, Mass. The request to do this had come originally from influential friends in America, who had been more interested in the London plans at that time than he was, and he had volunteered to sail the ship.

The *Mayflower II* was constructed by Messrs J. W. and A. Upham, at Brixham, Devon, and he had no control over the planning or construction. The vessel was not built under Lloyd's survey, but Mr Baker visited the yard from time to time and was responsible for the ship's construction. The Ministry of Transport and Civil Aviation took what might best be described as a benevolent and helpful interest in the ship, and their surveyor in Plymouth made frequent visits to Messrs. Upham's yard. He did not hesitate to lay down the law regarding safety, when he felt inclined, and it was on his suggestion that the hatch coamings had been raised beneath both the forecastle-head and the quarterdeck. The ship carried modern inflatable life-rafts, as she could not be fitted with davits to carry lifeboats, and the ministry had expressed the wish that she be fitted with a two-way wireless and carry a qualified operator. To provide power for the wireless installation, a small Lister generator was installed, but there was no auxiliary power. Had there been, Mr Villiers said, he would have taken no further interest in the vessel.

As completed, the length of the keel was 58 ft., breadth within the plank 25 ft. and depth 12½ ft. Her water-line length, loaded, was about 88 ft. and her draft when leaving Plymouth, England, was 13 ft. 8 in. aft, which put her very deep in the water.

Upham's shipyard had made a good job of the ship, under considerable difficulties, and had taken a great interest in her construction. As finished, she looked a picturesque and sturdy little vessel. But Mr Villiers pointed out that he was no expert in the field of early seventeenth-century shipbuilding—he was merely a practical seaman, and as such there were two major points about the new *Mayflower* which had worried him. One was the excessive height of her hull, and the other was the dimensions of her masts, which he thought were too slender. As Mr Baker was required to design a vessel which was to be on public exhibition in America, he had had to give

her head-room both in the 'tween decks and the superstructure. This meant that the vessel was probably 3 ft. higher than the original, which made her 'top-heavy'. She might also have had a foot more beam, to her considerable advantage. Because of this top-heaviness, she had been floated out of the Brixham dry-dock in a state of neutral stability and very nearly went over. This was corrected by stowing more ballast of sawn lengths of old railway iron beneath the floor in the hold; and, when she sailed, she had just over 130 tons of this ballast. This made her very stiff, and the consequent wild motion threw considerable strain on the masts and yards. Judging from his experience in sailing in Arab and Maldivian deep-sea dhows and from what he had been able to see of Chinese junks, Mr Villiers thought that at least the lowermasts should have been much stouter spars. Dhows and junks, he said, also had cordage rigging, but it was common practice to mast them so solidly that the lowermasts practically stood up without the support of standing rigging at all. Indeed, their standing rigging was not standing, but set up to windward with tackles as required. The diameter of the main lowermast in the *Mayflower II*, he said, was $20\frac{1}{2}$ in., which compared with $22\frac{1}{4}$ in. given for a similar spar by Matthew Baker. The bowsprit was not supported by any rigging, but simply stepped at an angle into the tweendecks, and the foremast was stepped practically into the curve of the cut-water so far forward that he could not understand how it could have adequate support from so narrow a spread of shrouds; and these points worried him quite a lot. He could not, he said, see how the ship could carry the press of sail necessary to beat to windward against a succession of heavy westerly winds, such as blew in the North Atlantic in the spring of 1957; and he had grave fears that she might be at least partially dismasted. Moreover, he had not sufficient spare spars on board to re-rig her at sea.

The cordage (which was specially laid up for the ship by the Gourock Ropework Company of Port Glasgow) was magnificent, and he had no fears for that. The spars of Canadian pine were also good material, as far as they went, but he did think that a couple more inches on the girth in all four lowers, i.e. bowsprit, fore, main and mizzen, would have been a great help. He had been especially worried about the bowsprit, with its rather large spritsail, and the foremast. As for the topmasts, they looked to a Cape Horner, like himself, as little better than broomsticks, but had an advantage that they could be sent down easily. In any event the ship sailed on her lowers, and the big topsails were the first sails to be taken in.

Mr Villiers then showed a colour film, which he had, for the most part, taken himself, and gave a commentary, which was frequently punctuated with applause and laughter from his audience.

When he sailed, Mr Villiers said, the easterlies of spring had blown out. Both the weather map and the ice-plot of the North Atlantic were 'pretty terrible'. Some of the gun-ports seeped a bit, and the quarters proved altogether too historically correct in that they leaked to a considerable extent too.

The new *Mayflower's* motion was violent and continuous, and even some of the old Cape Horn seamen on board were rather seasick at first. Mr Villiers said that, despite the fact that 25 May had been arbitrarily set—not by him—for his arrival in Plymouth, Mass., he soon decided that he had better go the southern way. This meant sailing another 1800 or 2000 miles and made an end of any predictions about arrival dates. But it also meant the ship's more probable arrival in one piece, with her masts standing; and he was in favour of that.

As for her sailing qualities, he had had little opportunity to test them before going to sea, and the Atlantic passage was virtually her sailing trials. She sailed and handled very well; her top speed proved to be 7·7 knots. He thought that she might have made at least a knot better than this, had she not been so deeply laden. In addition to the ballast and fresh water (10 tons in steel tanks deep in the hold) and necessary stores for three months, the vessel was carrying some 20 tons of 'Treasure Chests', the best of British goods, for a sales promotion campaign on the American market. This put her big transom well down in the water and caused considerable drag. Apart from the rather clumsy stern, he thought her underwater lines were clean. As a square-rigged ship, he said, she handled like a very handy little barque. She tacked ship easily and performed smartly all the evolutions of a square rigger.

The spritsail proved itself a most useful manœuvring and balancing sail, though the spritsail yard was always a 'bit of a brute to handle'. This was because of the multiplicity and awkwardness of its gear. On a wind, the spritsail set and pulled very well, for the yard could be braced up;

and, as long as the weather clew of the sail was set well to windward so that it did not 'lift', the weather sheet acted quite well as a tack, and the sail stood and pulled efficiently. This had surprised the sailors, including himself, for they had thought that they would have to scrap the spritsail for the ocean passage and the excellent Brixham sailmaker, Mr Bridge, had sewn some jibs to use in its place. They did not once bend the jibs.

The lateen mizzen was another surprise. The lateen yard proved to be wholly satisfactory. It dipped quite well on the after part of the upright mast, despite the standing rigging. The curious-looking lift rigged from the outboard end of the lateen yard to the mainmast-head largely made this possible together with the fact that the sail was always brailed up when it was shifted. The big bonnets on the courses worked very well too, but were awkward to get off in a breeze and made an efficient lookout rather difficult.

Altogether, the ship had acquitted herself very well, and had left them all with a great respect for Elizabethan British seamen. Where the exigencies of the passage and the inadequacy of the sailing trials had caused him to make more modern improvisations such as in the slinging of the course yards, he had regretted this and had learned that the ship would probably have been better as a 100% seventeenth-century product.

He had had to use wheel steering, because the whipstaff would not allow a sufficient angle of helm to be applied. The whipstaff was on board and would be rigged when the ship was on permanent exhibition. The efficient use of the whipstaff was affected by the dimensions of the hatchway through which it passed.

The ship was tried out in one severe blow, in which he had hove-to under no sail—lying 'a hull' as the old chronicles had it. The windage of the high poop kept the ship's shoulder nicely to the sea and she lay through a wild Gulf Stream night in perfect safety; but she had also driven 60 miles to leeward.

Mr Villiers paid a glowing tribute to his officers and crew. 'They were a splendid lot', he said, and all had sacrificed something to take part in what they regarded as a worthwhile British effort—some of them a great deal. The Mate, Mr Godfrey Wicksteed, for example, was an old sailing-ship man and a former shipmate in the Hull four-masted barque *Bellands*, who had since left the sea and taken to schoolmastering. When the *Mayflower II* was to be sailed, he was headmaster of a school near Cambridge. He gave up his school and the house that went with it, got six months' leave from his education authority and cheerfully volunteered. The Second Mate, who had served his time in Finnish ships since the end of the Second World War, had halted his career to go back in sail—which he preferred anyway. The Third Mate, who was a boy in the ship *Joseph Conrad*, had taken leave from his command in the Danish Royal Greenland Company and cheerfully accepted considerable financial sacrifice. The same applied to the whole crew, who had come from Australia, Canada and South Africa, as well as from Britain. For example, a Scots Merchant Navy Officer, who had later become a qualified architect and town-planner, had left his town-planning in Addis Ababa and had come to England at his own expense to volunteer; the Surgeon-seaman, Dr John Stevens, had done much the same thing; and the Second Cook had given up his comfortable club in Fleet Street to work a seven-day and most uncomfortable week in the crowded galley of the tossing little ship, for the emolument of 1s. a month. The whole crew, he said, had been splendid, and they and the ship were royally received when the little vessel finally reached New England in mid-June, 53 days out from Devon.

The lecture lasted for well over an hour, and there was never a dull moment. So excellent was the film, so good the editing and so thrilling the commentary that it was almost possible for the audience to feel that they were serving in the ship and, subsequently, participating in the quite amazing celebrations on arrival in America.

One could not help wishing that Captain Christopher Jones, Master of the original *Mayflower*, had been spared to see this film. Even if he had felt bewildered to see the ship taken aback by a too inquisitive helicopter or mystified by the sudden arrival of the Welcoming Committee of Red Indians with their horses by air from Oklahoma, he would most certainly have paid homage, as we did, to the courage, the skill and the magnificent seamanship of Alan Villiers in sailing a ship of medieval type westward across the Atlantic, a feat not performed for at least two centuries.

TENBY FISHING BOATS

By R. J. H. Lloyd

MANY people know Tenby as a small and attractive seaside resort built on a promontory at the western end of Carmarthen Bay. Narrow streets lead up from the harbour to the main part of the town on top of the cliffs, where there is a fine view across the bay to the Gower peninsula or south to Caldy Island and the Atlantic. The town's long history is evident in its ancient buildings, and the early importance of its fishery in its Welsh name, *Dinbych-y-Pysgod* (Tenby of the Fish). The following is a brief account of the fishery and the boats used by the fishermen during the nineteenth century.

THE HARBOUR

The harbour lies on the north side of the promontory and is sheltered by the land from south, through west, to north, while a stone pier protects it from the long fetch across Carmarthen Bay.

In summer it is full of small pleasure craft, an assortment of dinghies, rowing boats, sailing yachts and motor launches. There appear to be only two boats which are engaged in fishing to any extent and they are used mainly for trawling in spring and autumn and for giving trips to visitors during the summer.

It was not always so. Once the harbour was packed with small trading vessels, trawlers from Brixham and oyster skiffs from Mumbles, as well as locally owned trawlers and many small luggers employed in line fishing and oyster dredging (Pl. I.).

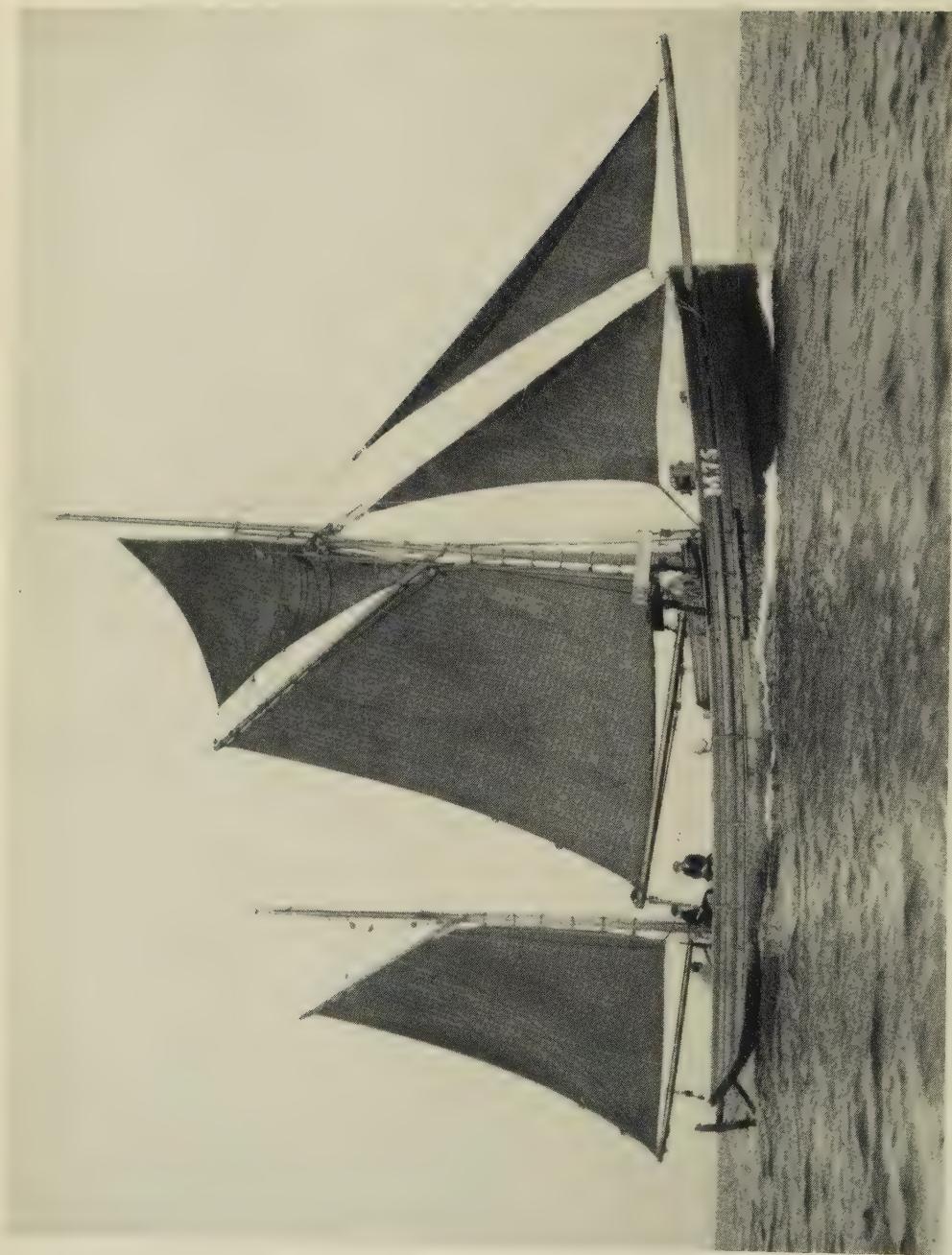
The stone pier projects northwards from Castle Hill. Originally the pierhead turned inwards towards the sluice wall on the west side of the harbour entrance, but in 1840 it was rebuilt and straightened. The sluice was the means by which the harbour entrance was kept clear of silt. The incoming tide entered through the flood gates which were closed at high water. When the tide had fully ebbed, the gates were opened and the water allowed to rush out carrying away any mud that had been deposited.

At one time St Julian's chapel stood near the pierhead and until about the middle of the eighteenth century, prayers were said there for the fishermen and their boats. A tithe of a halfpenny was paid to the officiating priest by each fisherman, and a penny for each boat. The chapel was later



Tenby Harbour (about 1900.) (Photograph: W. P. English, Tenby.)

PLATE II



Trawler *Willie* (22 tons). Owner: W. G. Griffith of Tenby. Master: S. Kingdom. Originally registered in 1891 as a cutter. Converted to ketch rig in 1901. (Photograph: W. P. English, Tenby.)

'degraded from its original sanctity' and converted into a bath.¹ In 1812 it was used as a blacksmith's storehouse and thereafter fell into disrepair. By 1835 little remained of it,² and what was left was demolished when the pier was rebuilt five years later. Now another St Julian's chapel stands on the shore at the top of the harbour.

Some of the fishermen acted as pilots and charged by agreement. It was not easy for sailing vessels to enter the harbour in certain winds, but once inside there was good shelter for vessels of up to 200 or 300 tons, except in very bad weather when there was a heavy ground swell. Sometimes considerable damage was done during severe south-easterly and easterly gales and one that swept the South Wales coast in October 1896 wrought great havoc among the vessels in the harbour and badly damaged a large part of the stone pier.

During the nineteenth century, there were few facilities for repairing vessels at Tenby. John Parcell and Lewis Rees were shipwrights there in 1835, and between 1880 and 1890 James Newt and Thomas George were building boats. No doubt there were earlier builders, but it is unlikely that they built anything larger than small open boats.

THE FISHERY

There was a fishery at Tenby in the fourteenth century, when it was one of the principal herring ports in South Wales.³ But throughout its long history it seldom appears to have been in a very flourishing state and often the fishermen were prevented by poverty from exploiting the local fishing grounds to the full.

The Piracy Commission of 1566 records the names of only two Tenby vessels, the *George* (16 tons) and the *Saviour* (12 tons). Both carried a crew of four and were employed in trade to North Wales or in fishing off Ireland and 'up Severn'. They appear to have been the only vessels fishing out of a Carmarthen Bay port at that time, except for two small inshore fishing boats at Marros.⁴

The lack of herring imports into Pembrokeshire during the sixteenth century suggests that the local fishermen supplied all that were required. Herring were taken in great quantities in Tenby and Caldy roads in 1602,⁵

¹ Charles Norris, *Etchings of Tenby* (London, 1812).

² Pigot and Co., *National Commercial Directory* (London and Manchester, 1835).

³ Colin Matheson, *Wales and the Sea Fisheries*, 1929.

⁴ A. E. Lewis, *The Welsh Port Books (1550-1603)*. Cymrodorian Record Series, No. XII (London, 1927).

⁵ G. Owen, *The Description of Pembrokeshire*. Edited by Henry Owen, Cymrodorian Record Series, No. 1 (London, 1892).

but after that there are very few references to herring fishing and the industry appears to have depended on fishing for other fish, or oyster-dredging.

In 1748 it was said that 'upon growing rich' the Tenby fishermen 'forgot the old marks of their fishing ground and lost the fishery' and that recent attempts to find it had been unsuccessful.¹ On the other hand, the Swansea Fishery Company at a meeting held in 1775 records that a fishing company operating at Tenby in the 1750's had failed, not because of a lack of fish, but because it had agreed to pay the fishermen according to the quantity of fish caught and more fish were taken than could be sold.²

By the beginning of the nineteenth century the local fishermen were once more beset by poverty and only owned a few small boats suitable for fishing near the shore. Out at sea most of the fishing was done by trawlers from Brixham and Torbay. They usually fished within sight of land and only entered Tenby for supplies and refitting, or when driven to seek shelter in bad weather. At week-ends twelve or fifteen of them would lie in the bay from Saturday night until Monday morning, when they returned to the fishing grounds.

Although Brixham boats appeared to increase Tenby's importance as a fishing port, in reality they were of little service to the place as they seldom landed their fish there, but despatched the whole of their catch to Bristol several times every week in two of their own vessels.³

About 1813 some well-boats of about 40 tons burthen were fitted out as trawlers for the purpose of carrying live fish up-channel to Bristol and elsewhere. The experiment was conducted by 'a most liberal establishment set on foot... by Lord Somerville' and was intended to supply fish to the inland parts of the country at a reasonable price. After three or four years the scheme was abandoned.⁴

During the last half of the nineteenth century, the Brixham fishermen continued to visit Tenby every summer as their fathers and grandfathers had done before them. They came in seventeen or eighteen trawlers and remained there from May to September.

Some Brixham men found it convenient to live in Tenby. There had probably been a gradual settlement over a long period and by 1864 there was a small colony of them living in the town. They found employment in

¹ Lewis Morris, *Plans of Harbours, Bars, Bays and Roads in St George's Channel, 1748.*

² *The Proceedings of the Swansea Fishing Company, 1775*, from a collection of *Broadsides relating to Swansea and Glamorgan*, at the Royal Institution of South Wales, Swansea.

³ E. Donovan, *Descriptive Excursions through South Wales and Monmouthshire in the Year 1804* (London, 1805).

⁴ *An Account of Tenby containing an Historical Account of the Place* (Pembroke, 1888).

the locally owned trawlers and line-fishers, which had greatly increased in numbers as the century advanced.¹

The coming of the railway to Tenby made it possible to send fish to the growing industrial areas of South Wales and to the centres of population in south and west England. Nearly all the Tenby boats and many of the Brixham ones, now brought their catches to the local market and only a few landed their fish elsewhere, mainly at Swansea. In the 1870's Tenby was the only really important place as a fishing station on that part of the South Wales coast.²

Fishing grounds. It appears that the fishing ground most frequented by the Tenby fishermen before the seventeenth century was known as 'Will's Mark'. In 1627 the Mayor of the town considered this bank sufficiently important to have its position recorded in a document. The document existed until quite recently, but has lately been lost or destroyed. Fortunately, there is a photograph of it in the Tenby Museum from which the following copy has been taken:

Emmanuel, The 26th Aprill 1627

Abt wiche time John Rogers Mayor of Tinby, And understanding that there is a Rock Called Wiles Mark Lying Betwixt Calde and Lundie And wormes head, Being in Length a bout a League, and in Bredth, About halfe a League, As it is Reported. And hearing that there hath been such a Bundance of God's Blessings in fish one the said Rock as that the town of Tinby and the key therein was first Builded by the Benefit of the fish that was taken thereon, The said Mayor Entreated all the old Fishermen whose names are here under written to nominate unto him as near as they Could, what wear the Marks that was houlding to Be good to finde out the said Rock, And these parties Delivered as followeth...

The fisher men's Names	Jo ^a : Brown Jon: Adams Tho: Adams Jo ^a : Moore Wm. Leathinge	Reporte That the Rock Lyeth in the midst of the Sea, Betwixt the Ilands of Calde, Lundie and the wormes head in the Midst of a Triangle or as it were in the Midst of a Brandas of three Leagues,
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Soe that the Rock Lyeth Betwixt Caldie Lundie And the wormes head And it is Reported By the Fisher men and others that goe to seeke it, They ought to hould their Course from the Easter point of great Calde over the Ebb South East And by East untill you Bring the High hill of neath which is beyond swansie Right over the Lower point of Portaynon and the windmill of Tenby Right over the Chapell of Calde Top for Top, And then the wormes head will Appear Like a Saddle, and as it were a man sitting in the saddle, And Being upon it; Lundie Lieth from it south and by west; And it is Reported by the said Fishermen that there is 12:14 or 16 feathoms of water upon it, and 32 fathoms About it, and that there is about it, Millwell, Linge Congers, Breams, Gornets and all kinde of sea fish Gods Plenty thereof and foules doe flock a bout very much in ye sumer.

Alsoe the said fishermen say that the Course to finde the said Rock Called wills mark; is to goe first to East Colbrin which is a Rock or place well known to fishermen of Temby, And from

¹ Report of the Commissioners appointed to Enquire into the Sea Fisheries of the U.K. 1866.

² E. W. H. Holdsworth, *Deep-sea Fishing and Fishing Boats* (London, 1874).

thence saile or Rowe by pointe of Compas south East and by East over the Ebb Tide, and then let fall a Cellinough to hang triping with the ground untill the said Cellinough Catch hold of the Rock called wills marke and doe wend the Boate a bout, and they say that this hath been the old Course to finde it after ye goe from Colbrin, the weather be clear or misty. Alsoe there was a South Costeman Came to Joⁿ Rogers Mayor of Temby 1612 And he said to him & Divers of the Aldermen of Temby that he came by Chance on a Rock a bout half way Betwixt Lundie and Calde in a Calme and lett fall his Anchor, and finding himselfe on a Rock he sounded and found a bout some 18 feathoms of water on it, And he cast out fishing Lines and within two hours or there abouts, he tooke as much fish as he sould in Temby the next Day by Retaile that he made Twenty nobles of it, and had fish to serve his kittle till he went home to the south Cost again I Pray god send our Fishermen noe wors voyage.

J.R.

In spite of the trouble taken to record these sailing directions, the Tenby fishermen had forgotten how to find 'Will's Mark' by the mid-eighteenth century, nor has it been possible to identify it since, though from the description in the document it would appear to lie some 10 miles S. by E. from Caldy Island.

During the eighteenth and nineteenth centuries the Tenby fishing grounds lay within Carmarthen Bay and an area to the south bounded by Worms Head in the east, St Gowan's Head in the west and Lundy Island in the south. None of the Tenby boats appear to have fished outside this area until the beginning of the present century, when some of the largest trawlers began to search farther afield and fished off Ireland and in the approaches to the Bristol Channel during the winter and spring.

Trawling. During the nineteenth century the Tenby trawlers spent the summer months fishing by day and night between Worms Head, Lundy Island and St Gowan's Head. From early autumn until the following April, those that were not engaged in oyster dredging or laid up fished only during the daytime and within the confines of Carmarthen Bay.¹ When the largest trawlers began to visit more distant fishing grounds after the beginning of the present century, they were mostly to be found off the Wexford coast from November to Christmas, and between Lundy Island and the Longships from January to April. They returned to refit at Easter and during the summer worked their old fishing grounds in, or just outside, Carmarthen Bay.

The Tenby boats used a beam trawl similar to the Brixham ones. The length of the beam was not restricted, but varied according to the size of the boat and was generally between 38 and 40 ft. long. In 1864 there was no check on the size of the mesh used in the nets, but the smallest is variously reported as being 2 and 1 $\frac{3}{4}$ in. from knot to knot, which, according to the Tenby men, was larger than the mesh in the nets used by the Brixham boats.¹

¹ *Report of the Commissioners appointed to Enquire into the Sea Fisheries of the U.K. 1866.*

The quantity of fish caught by the trawlers during the nineteenth century did not vary much, nor did the type, and most of the common species were taken. They included brill, turbot, gurnard, soles, mackerel, dories, mullet, cod, ray, skate, dabs, and whiting.

Line fishing. Line fishing for cod started in November and continued until the end of February. Apparently there had been no line fishing at Tenby in 1810, but by 1864 between twenty and thirty open boats were employed during the season.¹

At that time the cod were thought to be decreasing in numbers and only a few other fish were caught on the line, mostly whiting, haddock and conger. Nevertheless, the number of boats continued to increase and in 1891 about thirty-nine boats were registered as line fishers.²

When fishing for cod, most of the fishermen used whelks for bait and caught them in traps or scooped them up in oyster dredges. Mussel was the usual bait for whiting.

Both long-lines and hand-lines were used and at one time they were worked in the same area as the trawlers, but the lines were so often fouled and carried away by the trawlers' gear that the line fishers eventually forsook the trawling grounds and confined their activities to the rough ground, mostly just outside the bay, where the trawlers did not fish. One of these areas was known locally as 'the dogger' and lay about $2\frac{1}{2}$ miles off Caldy Island; another extended about 2 miles east of the Woolhouse rocks.

Seine and drift nets. Probably the oldest method of fishing at Tenby was with Seine nets, and throughout the nineteenth century small open boats worked them off the beaches during the summer and autumn. The nets were about 70 fathoms long and 8–10 fathoms deep and many sorts of fish were taken in them, including salmon, herring and particularly mackerel. In 1864 about eight boats were employed, each with a crew of five, and their numbers were said to be increasing, but it is doubtful if there were many more in the 1890's.

Some of the larger boats fished for herring with drift-nets and it appears likely that the ten boats registered for net fishing in 1891 were employed mainly in this way. They carried a crew of two or three men.

It has already been mentioned that there are few references to herring fishing at Tenby after the early seventeenth century and it was certainly quite an unimportant affair throughout the nineteenth century. In 1864 only four boats were employed and the season commenced in October and continued until Christmas. The method of fishing at that time was to drift for a few hours in the usual way and then to moor the nets for a period.

¹ Report of the Commissioners appointed to Enquire into the Sea Fisheries of the U.K. 1866.

² Register of Fishing Boats for the Port of Milford.

Oyster dredging. The oyster beds most frequently worked by the Tenby boats lay about 2 miles north of Caldy Island and were about $1\frac{1}{2}$ miles in length and 1 mile in breadth.¹ About 14 miles farther west other good beds lay some $\frac{3}{4}$ mile south of Stackpole Head in 5–14 fathoms of water; but because of the distance from Tenby, these beds could only be visited in good weather by the open boats that did most of the dredging.

Both the Caldy and Stackpole beds produced an exceptionally large variety of oyster. They were being exported from Tenby as early as 1582,² and a few years later, in 1602, were described as the great kind of oyster gathered at Caldy and Stackpole which 'being eaten rawe seeme to stronge a meate for weake stomackes' and it was recommended that they be used in 'Pyes, stueinges, brothes, fryed and boyled, wherein he is found most delicate'.³

At the beginning of the nineteenth century Tenby was exporting large quantities of oysters in the shell, or pickled in small jars, and oyster dredging was the chief employment of the fishermen during the winter months. Apprehension was felt for the future of the oyster beds, which were becoming less productive and the introduction of some statutory regulations for their protection was urged.¹

Nothing was done, and it seems probable that the number of dredge-boats actually increased as the century advanced and at times the open boats normally used were joined by local trawlers and oyster skiffs from Mumbles.

By 1864 the effect of overfishing was becoming more apparent. At that time eight or nine open boats were employed during the season, with an unknown number of larger vessels. By 1891 the number of open boats appears to have decreased to four. They carried a crew of three men and each towed one dredge with a $2\frac{3}{4}$ in. mesh. They no longer brought in 2000 or 3000 oysters at a time, as they had in the past and were only able to provide sufficient for local needs. The oysters considered too small for the market were thrown overboard, but until 1864 no regulation was enforced to control the minimum size of oyster that could be kept. Earlier in the century oysters had sometimes been brought from the Stackpole beds to restock the beds at Caldy, but this practice appears to have been discontinued.⁴ Nor were there 'nurseries' where young oysters could be laid down to mature, as was the practice at Mumbles.

¹ E. Donovan, *Descriptive Excursions through South Wales and Monmouthshire in the Year 1804* (London, 1805).

² A. E. Lewis, *The Welsh Port Books (1550–1603)*. Cymrodon Record Series, No. XII (London, 1927).

³ G. Owen, *The Description of Pembrokeshire*. Edited by Henry Owen, Cymrodon Record Series, No. 1 (London, 1892).

⁴ *Report of the Commissioners appointed to Enquire into the Sea Fisheries of the U.K. 1866.*

FISHING BOATS

Trawlers. There were no trawlers belonging to Tenby in 1810 and only one in 1832, so, apart from pictures that show some of Lord Somerville's well-boats, the fishing boats shown in illustrations of Tenby harbour during the early years of the century presumably belonged to other ports, or to the artist's imagination.

During the second half of the century, the number of Tenby trawlers increased and by 1864 there were thirteen, including several which, although manned by Tenby men, actually belonged to Milford. A few years earlier there had only been four or five.¹

Most of the Tenby trawlers were smaller than the Brixham boats and were a very mixed lot. Some were built in Devonshire and Cornwall while others were bought second-hand from widely separated places. A few may have come from yards in Milford Haven, but none appear to have been built at Tenby.

In 1864 they were all decked vessels and could be divided roughly into two classes, small trawlers of 16 or 17 tons and large ones of 30 tons or more.

By 1891 the number of locally owned boats had increased to nineteen and the following table shows how they varied in size:²

Class	Tons	No. of trawlers		Alterations in Register 1891
		Cutter	Ketch	
2	5-10	3	—	One founded
2	10-15	1	—	One transferred Brixham
1	15-20	4	—	—
1	20-25	—	2	—
1	25-30	1	1	One transferred Milford
1	30-35	3	—	—
1	35-40	2	—	—
1	45-50	1	—	—

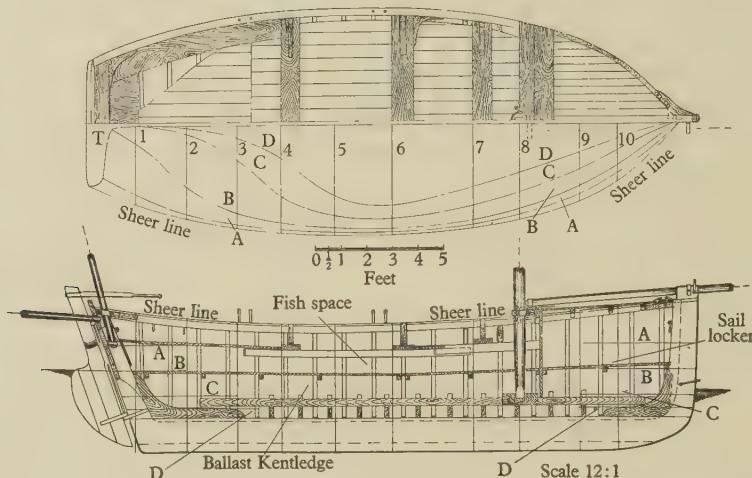
In addition to these Tenby owned trawlers, there may have been some Milford or Swansea boats stationed permanently at Tenby and manned by Tenby men, as although this is not indicated in the Register of Fishing boats, it is known to have been a common practice.

At the end of the century the ketch rig increased in popularity, in 1901 the trawler *Willie* (22 tons) (Pl. II) was converted from a cutter to a ketch, and registrations during the 1890's and the early years of the present century show a preference for the two-masted rig.

¹ Report of the Commissioners appointed to Enquire into the Sea Fisheries of the U.K. 1866.

² Register of Fishing Boats for the Port of Milford.

Samuel Dewdney and Son of Brixham built several trawlers for Tenby owners at about this time. They included the cutter (later converted to ketch) *Zeal* (25 tons) for Patrick Crockford in 1891/2 and the ketch *Gwendoline* (43 tons) for Thomas Henry Lillycrop in 1894.



Text-fig. 1. Tenby lugger *Seahorse M 170* (1886) (ex *Three Sisters*). Half-breadth and constructional detail. (From a photograph in the Science Museum, South Kensington.) L.O.A. 24'. Beam 8'10". Depth inside 3' 8 $\frac{1}{2}$ ". Owner Robert Hooper, Tenby. Built by James Newt, Tenby, c. 1886.

The agreement for building the *Gwendoline* is preserved in the Tenby Museum and the following particulars have been extracted from it:

Rig: Normal Brixham rig, Ketch or Dandy.

Dimensions: Length of keel 54 ft.
Beam 17 ft.
Depth 8 ft. 6 in.–8 ft. 9 in.

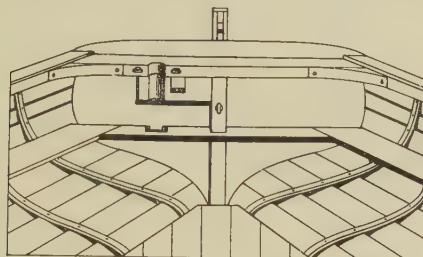
Frames: Good English oak

Outside planking: Good English oak and elm, elm bilge planks—trenail fastened and butt bolted—also bolted extra from covering board to bilge for about 20 ft. amidships with $\frac{5}{8}$ in. galvanized bolts through and clenched, the ceiling to be of English oak and pitch pine and the whole to be fitted and fastened in a good substantial and workmanlike manner.

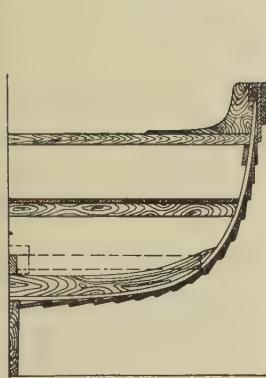
Also to supply: Good spars, boat, cabin, engine room, forecastle, platform over ballast, capstan chock, oak towing post; channels, iron pump with two sets pump gear, pair boat davits, wink bitt, line the rail between the rigging with hardwood woodwork, winch and windlass, lime and sand between the frames, scrape and black the vessel with two coats of tar.

Price: £450.

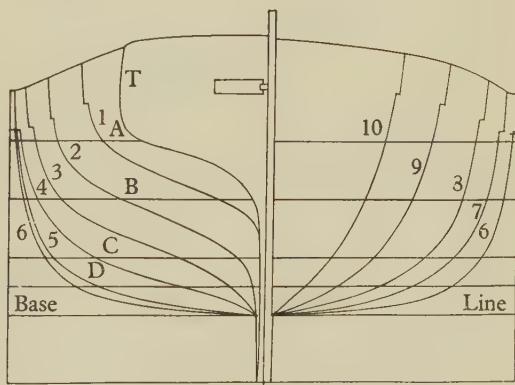
Some of the trawlers were laid up during the winter. Others continued to fish in Carmarthen Bay and, at the turn of the century, some of the largest boats started to visit the more distant grounds off Ireland, Cornwall and elsewhere. In 1891 all the Class II trawlers appear to have dredged for oysters in the autumn. They probably dredged from September until Christmas and were then laid up until March or April.



Projection of transom
showing
mizzen step and boom details



Section no. 6 construction



Scale 12:1

Text-fig. 2. Tenby Lugger *Seahorse* M 170 (1886) (ex *Three Sisters*). Body plan and constructional detail. (From a photograph in the Science Museum, South Kensington.)

Some of the trawler masters owned their own vessels,¹ others were paid on a share basis with the rest of the crew. The large trawlers carried a crew of three men and a boy, occasionally four men, while the small ones carried two men and one boy, or in a few cases, two men. When the trawlers were laid up most of the men found employment ashore or in the line-fishers and oyster-dredgers.

¹ Report of the Commissioners appointed to Enquire into the Sea Fisheries of the U.K. 1866.

Luggers. These open boats were used mainly for line and drift-net fishing and oyster dredging. They varied in size, but were nearly all of similar design and rig.

They are shown in illustrations of Tenby at the beginning of the nineteenth century and subsequently, were built locally and the number in use increased as the century advanced. In 1804 there were 'a few' and in 1864 between 20 and 30. By 1891 there were not less than 49 and the following table shows how they varied in size and the number which, according to the Register, were primarily employed in each type of fishing:¹

Length of keel in ft.	Used primarily for			Total
	Line fishing	Line fishing and oyster dredging	Fishing with nets	
15	3	—	—	3
16	8	—	—	8
18	1	—	—	1
20	3	1	5	9
21	8	1	3	12
22	3	1	2	6
22	7	—	—	7
24	1	—	—	1
25	1	1	—	2
Total	35	4	10	49

Registrations after 1891 show that the tendency was to build larger boats during the last ten years of the century. The largest, the *Eileen*, had a keel length of 27 ft.

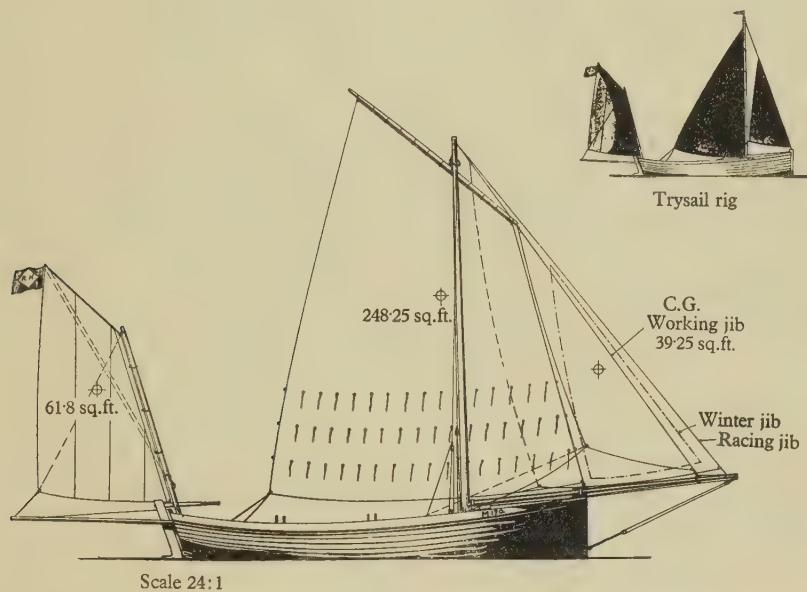
A visit was made to Tenby and Saundersfoot in 1957 to see if any of the old luggers remained; only one was found and it had been so greatly altered as to be almost unrecognizable. The following description of these boats has been based on information provided by Mr William John Jones of Tenby and on a study of drawings and photographs in the Tenby Museum and the plans of the *Sea Horse* in the Science Museum (Text-figs. 1-3).

Hull. Some boats had carvel-built hulls, but most of the early ones were clinker-built. They had straight stems, long straight keels and slightly raking transoms. The forepart was decked to the mainmast and underneath was a small cuddy. There were usually three rowing thwarts and a thwart and quarter benches in the stern sheets. All the ballast was carried inside and they drew about 3 ft. of water.

Masts and spars. The mainmast was stepped about one-third of the boat's length from the stem-post and was clamped to a stout thwartships beam called the crosspiece, at the after end of the fore-deck.

¹ Register of Fishing Boats for the Port of Milford.

The mizzenmast was usually about half the length of the mainmast and was stepped in a socket on the transom, to starboard of the rudder-head. It followed the rake of the transom.



Text-fig. 3. Tenby lugger *Seahorse* M 170 (1886) (ex *Three Sisters*). Sail plan and spar dimensions. (From a photograph in the Science Museum, South Kensington.)

Spar dimensions		Sail areas (sq. ft.)	
Fore-mast L.O.A.	24' 8", dia. 5 $\frac{1}{2}$ " to 3"	Lugsail	248.25
Yard	12' 4", dia. 2 $\frac{3}{4}$ " to 1 $\frac{1}{2}$ "	Spritsail	61.8
Bowsprit L.O.A.	15' 6", outboard 8' 10"	Big jib	97.31
	dia. 3 $\frac{1}{4}$ " to 2 $\frac{1}{2}$ "	Summer jib	39.25
Mizzenmast	12' 4", dia. 3" to 2 $\frac{3}{4}$ "	Winter or storm jib	30.23
Mizzenmast boom	9' 6", dia. 2 $\frac{1}{4}$ " and 2 $\frac{1}{2}$ "	Total area, working	
Sprit	14' 8", dia. 2"	sails	349.3

When a bowsprit was carried, it was a long spar that passed through an iron ring to starboard of the stem-post with the heel secured in a socket on the fore-deck near the mainmast.

The outrigger spar to which the mizzen was sheeted was invariably made of ash, the inboard end was squared and tapered and was stepped through a hole in the transom, to starboard of the rudder-head. This spar, the mainyard and the mizzen-sprit were all light spars.

Standing rigging. The mainmast had no standing rigging, nor had the mizzenmast. The bobstay purchase block was shackled to a chain secured to the stem-post.

Running rigging. There were purchases to both main and jib halyards. The main halyards were secured to a pin in the weather gunwale and supported the mainmast. The jib halyards led to a cleat on the crosspiece. In bad weather, when a trysail was carried, the jib halyards were transferred to the gunwale to give additional support to the mast.

The mainsheets were single, so also were the jibsheets, which led port and starboard to pins almost level with the centre thwart. The mizzen-sheets led through a hole at the end of the outrigger spar and thence inboard to a cleat at the base of the mizzenmast, thus preventing the outrigger from coming out of the hole in the transom.

Sails. The mainsail was a dipping-lug with two, or more often three, rows of reef-points and in pictures of early boats they appear to have been very badly cut sails. A trysail was sometimes carried in bad weather.

No headsails were carried before about 1832, but afterwards many boats began to carry a jib. At the end of the century some had up to three jibs of various sizes and set the one appropriate to the strength of the wind.

A small spritsail was set on the mizzenmast.

Some fishermen owned more than one boat and each had a crew of two men and a boy, except when fishing with nets when the crew was sometimes increased to three men and two boys. Up to the 1890's, it seems to have been the practice for owners of two boats to register one for line fishing and the other for net fishing, but afterwards they were registered for 'fishing' without specifying the method. During the summer most of them were used for giving trips to visitors and this pursuit was found to be pleasanter and more profitable than any sort of fishing.

THE DECLINE

Well before the end of the nineteenth century, Tenby, like other small fishing ports, was beginning to feel the effects of a changing economy. Not far away Milford was developing into a large and important fishing station with a rapidly growing fleet of steam trawlers and drifters. The magnificent natural harbour of Milford Haven provided ideal conditions for this development and the new docks at Milford had far better facilities than could be offered by small places like Tenby.

These, briefly, were the main factors which caused the decline of Tenby's

little fishery and the extent of the decline can be judged by the following figures:

Year	Wet fish landed (cwt.)
1896	6507
1899	6800
1911	2485
1914	1596

In 1953 only 102 cwt. of fish were landed, so that the fishery, which for so many centuries provided one of the main maritime activities at Tenby, has now almost ceased to exist.

THE FINANCE OF A SIXTEENTH-CENTURY
NAVIGATOR, THOMAS CAVENDISH OF
TRIMLEY IN SUFFOLK

By Gwenyth Dyke

WHILE the events of the Elizabethan voyages are the inheritance of every Englishman, the finance and planning which produced these results are largely unexplored. There are two reasons for this: it was not practical politics in the sixteenth century to show one's hand in public affairs, so the members of the syndicates kept their participation quiet; and the legal documents which are the main evidence for such transactions have been destroyed or widely scattered, so that they are inaccessible or tantalizingly incomplete.

I count myself fortunate, therefore, in having had access to several of the documents concerning the finance of the three known voyages of Thomas Cavendish, the second English circumnavigator. There were undoubtedly many more and the picture is meagre, but enough survive to show how this maligned man found capital to translate his dreams into achievements. He was born at Grimston Hall in Suffolk, above the wide, exciting estuary of the Orwell, overlooking the flourishing port of Harwich—a scene to stir the imagination. The last of a long line of country gentlemen noted for their hot tempers and steady acquisition of land, he was early introduced to the handling of property by the death of his father when he was twelve, and under the care of Lord Wentworth, his uncle, was given the usual education of a sixteenth-century gentleman: school, university, and probably Inns of Court.

The English world of Elizabeth's reign was a small, closed society in which all the leading figures knew each other. Thomas Cavendish was related by marriage to the Cecil, Frobisher, Brandon, Seckford, Tolle-mache, Wingfield and Wentworth families, and his generation at Cambridge included the young Hakluyt brothers, Richard and Thomas; Francis Bacon, and the Earl of Cumberland. He called half the nobility 'cousin' and these connexions gave him a footing at Court and entrance to the charmed circle of famous navigators, who were also landed gentry, statesmen, courtiers, and administrators. He assumed his estates between 1578 and 1580, and thenceforth spent his energies preparing for his voyages, doubtless deriving fresh inspiration from the success of Drake in the Pacific.

The first monetary deal of which I have evidence is mentioned in a letter¹ from Sir Thomas Gresham to his servant Thomas Cely, in which he speaks of a bond of Alderman Dixie² to 'Mr Cavendish of Tremley', implying that the Alderman was content to remain bound in the sum of £44. This manuscript, dated 1578, may indicate the beginning of his shipping ventures, or merely a systematic gathering of surplus money into his own hands.

When he attained his legal majority in 1581-82, the dealings increased in number and importance. His mother had been left the Lincolnshire manors of Crosby, Woodthorpe, Winthorpe, Caxby and Otford by her husband, and she concluded an indenture³ with her son, Henry and Humphrey Seckford and George Ognell, by which she was to receive £120 yearly, while Cavendish took the rents and profits for twenty-six years. He now possessed eight large Suffolk estates and these five manors, which amply satisfied his routine needs, though the life of Elizabeth's courtiers constantly provoked financial disaster. However, in 1583 Gilbert⁴ and his associates were preparing intensive plans for the exploration and settlement of North America, with much propaganda, and Cavendish, probably already acquainted with the group, began to make his preparations too. For a consideration of £270 he mortgaged⁵ a small estate in Levington, Suffolk, to William Peake, citizen of London, for three years. This seems to have been abortive and the estate was redeemed three months later. It is tempting to connect this transaction with Gilbert's Newfoundland voyage, but no evidence of such a connexion has yet appeared.

Despite Gilbert's death the colonial project went on, assuming a new urgency as the importance of an American base against the Spanish West Indies became apparent. The publicity shut down, for this was a State affair and outside backers were no longer required. Raleigh was given charge of the preparations in association with the Queen and Walsingham, and planned the 1584 scouting voyage of Amadas and Barlowe, Grenville's expedition which reconnoitred the West Indies in 1585 and established the Roanoke settlement, and a surveying party led by Drake in 1586. These plans were altered by the Armada threat, but were carried out with certain necessary changes. Raleigh may have hoped to lead the main expedition, but eventually Grenville was chosen, and a group of M.P.'s, including Thomas Cavendish, saw to the preliminaries. Cavendish became High Marshal of the enterprise, second in command to Grenville, a great honour for a young and untried man. He obtained advice⁶ for the syndicate on

¹ S.P.D.E. 12/122/41.

² A member of the Skinners' Company and Sheriff of London in 1575 and Mayor in 1585.

³ C.P. James 1, Bundle cc7/42.

⁵ E.S.R.O. 312/261 and 50/22/1/30.

⁴ D. B. Quinn, 'Gilbert'.

⁶ E.R.O. D/DRh/Z.

military equipment and fortifications and supplied or victualled a ship for the fleet. To do this he bargained¹ and sold five of his Suffolk manors, Stratton, Wenham Combust, Sweffling, Belton and Gapton, to the Seckfords and Nathaniel Gamble of Ipswich for a 'certain sum of money' on March 9, 1584/5, to be redeemed by Lady Day 1586 at the 'Faunte Stone' in the Temple Church at London.

Eleven days after the Parliamentary Session ended on 29 March, Cavendish began his first voyage; this was to Virginia with Sir Richard Grenville. He acquitted himself well enough to warrant inclusion on a list of notable sea captains² and suffered no financial loss, redeeming his manors in due course. From the time of his return he was making ready a greater exploit, a voyage to follow up Drake's West Indian venture, and possibly, though this was kept very quiet, to emulate his circumnavigation. This was also a political move in which the Queen and her counsellors showed secret practical interest; for although the great men were needed in England as the Armada neared completion, a promising younger man could continue the long-term policies. Cavendish showed confident determination in his own preparations. Documents³ in the East Suffolk Record Office prove that in 1585/6 he made two indentures, one on 16 February which conveyed the tenement of Chasers in Levington to Humphrey Seckford of Ipswich for £300; the other, on 18 February, conveyed the same tenement to John Foxe of Aldeburgh⁴ for £318, this time with Humphrey Seckford as partner. Cavendish had earlier conveyed the manor of Stratton Seabridge in Levington to Humphrey Seckford for £500, so the total money raised was £1118. He sold⁵ other land to John Wingfield for an unspecified sum. In April 1586 he sold⁶ more land in Trimley to the Seckfords, and raised a 'large sum' of money—this appears to have been his home, Grimston Hall. On 13 May he made a Statute Staple⁷ with the Seckfords and John Foxe to his mother of Chaunters tenement in Levington, from which he gained the £2000 given to the High Court of Admiralty as a recognizance⁸ for the 'good behaviour of his ship' on May 28.⁹

In addition to the money raised from his land, he received investments from adventurers¹⁰ in his voyage. Dr Julius Caesar and others put in £50

¹ B. & W.S.R.O. E 1/36.

² S.P.D.E. 12/186/8.

³ Cl.R. C 54/1309 and E.S.R.O. 50/22/1/22.

⁴ E.S.R.O. 312/252. John Foxe was probably the same man involved in the fight of the *Three Half Moons* against the Barbary pirates, who was enslaved for fourteen years and afterwards served the King of Spain. He traded on the coast of Suffolk, his chief bases being Woodbridge, his birthplace, and Aldeburgh.

⁵ Cl.R. C 54/1370.

⁶ Cl.R. C 54/1309.

⁷ E.S.R.O. 50/22/1/22.

⁸ B.M. Add. MS. 12504/301.

⁹ B.M. Add. MS. 12504/301a.

¹⁰ Lans. MS. 157/67.

each, smaller sums which may have been used to provision the ships which by now were lying ready in the Thames. After a month at Harwich, the fleet—the *Desire*, the *Content*, and the *Hugh Gallant*—left for Plymouth, and on 21 July 1586 set off for the South Atlantic, victualled for two years. Haklyut's excellent accounts of this voyage emphasize the 'invincible courage, great good government and incredible celerity' with which Cavendish girdled the earth in two years and fifty-one days. It was eventful and successful: the minor harbour of Port Desire in Patagonia was discovered; the Straits were passed and Sarmiento's ruined fort visited. Sailing up the west coast of America he made great spoils, sinking nineteen ships, ransacking Spanish settlements and obtaining treasure, and setting the seal to this by capturing the *Great St Anna*, with 122,000 pesos of gold, and rich cargoes of silks, spices, damasks, satins, victuals and wines; then with one ship, the other two being lost, sailed the Pacific and traded in the Spice Islands, where he made acutely perceptive notes of their commercial possibilities and established agreements with their chiefs. Finally, he returned via the Cape of Good Hope and St Helena on the tail of the Armada storm in 1588, loaded with treasure. While lacking the prescience and audacity of Drake, he had done very well, and lost no time in adding his success to England's crown of victory. He wrote to Lord Hunsdon on the day of his return, summing up his voyage and hinting at 'such intelligences as hath not been heard of in these parts', and at trading agreements in the Indies, thus casting his achievements at the Queen's feet. Customs clearances, illness, and formalities kept him at Plymouth for a month, during which time he was chosen as M.P. for Wilton. Dr Julius Caesar wrote congratulating him on his voyage and foreseeing the happiness of his fellow-venturers 'that they were admitted to your society' in a letter which was the first of an interesting series discussed below. Cavendish also corresponded with Sir Francis Walsingham, for there is a mysterious letter thanking him for great favours and for the loan of his physician. He mentioned the courtesy of the customs officials (the custom of his goods having been £900), and continued, 'there be some things which I have kept from their sight for special causes which I mean to make known to your honour at my coming to London, for I protest before God that I will not hide any one thing from you, neither concerning the quantity of my goods nor the secrets of the voyage, which in many things shall not be known but unto your honour for they be matters of great importance'. Whether these cryptic sentences concern politics, trade or treasure is not yet clear, but one result was Cavendish's call to London, where he arrived in mid-November 1588.

The Spanish ambassador had been banished for plotting in 1584, but still operated a spy system from Paris. His agents sent him highly coloured

reports of Cavendish's arrival with treasure estimated at 3,900,000 crowns, and of his voyage up the Thames to Greenwich, the sails of his ship being blue damask, its standard cloth of gold and blue silk, and all the sailors garlanded with gold chains—'it was as if Cleopatra had been resuscitated'. They spoke of the Queen's entertainment in a cabin hung with cloth of gold and silver, where she boasted of Spain's downfall. These accounts need to be taken cautiously, but the November journey up the misty river to the songs of ballad-mongers must have provided a brilliant scene, and Cavendish was undoubtedly wealthy, though after his backers were reimbursed and the Queen had had her pickings he was certainly not the millionaire later writers have made him out to be.

He was lodged at St Katherine's landing, and here suffered the importunities of Caesar for his percentage of the profits. Cavendish had other preoccupations: a triumphal return to Ipswich where he was feasted by the Assembly, the resumption of his estates, his Parliamentary duties, and the settlement of his other creditors. Caesar bided his time till February 1588/9;¹ then, reminding Cavendish of his many frustrated attempts at interviews, he demanded his 300% profit in money or silk. This produced no results, so the Doctor threatened legal action, and the final letter of the series, dated July 1589, shows that he and Cavendish settled on a compromise—Cavendish repaid the £50, and the £100 profit was to be reinvested in his next voyage. This seems to indicate a shortage of ready money which seems incredible after such a prosperous voyage, but there is no evidence to prove either hardship or extravagance.

On payment of £500 Humphrey Seckford² handed back Stratton manor, and later in May Grimston Hall and other Trimley estates were returned in consideration of a 'certain sum'. Cavendish spent the next two years alternating between London and Suffolk, no doubt spending liberally, but speculating not unsuccessfully with his new wealth. A series of tantalizing documents covers this period, beginning with a High Court³ of Admiralty deposition which speaks of the *Desire* at anchor in the Thames. Dr Julius Caesar's records refer to the 'Captain of the *Roebucke* under Mr Candishe for ship and goods conveyed to Barbary valor £1462' about this time. In July 1590 Jasper Bridgeman,⁴ servant to Caesar, complained of excessive charges at Plymouth by Mr Nathanaell and a mysterious gentleman called 'strange' who pretended to act on behalf of 'Master Candish's ships which took the Irish ship'; on 10 July 1590 the Lord Admiral's tenths list⁵ records the arrival of the *Roebuck* at

¹ This series of letters is in B.M. Lans. MS. 157/48, 50, 52, 67, 73.

² Cl.R. C54/1309.

⁴ Lans. MS. 145/83v and 145/354.

³ H.C.A. 1/42.

⁵ Harl. MS. 598/7v, and 598/10.

Southampton, owner Mr Cavendish, captain Abraham Cocke, which brought in a Portuguese prize laden with wine; and on 4 December 1590 of the *Galleon Dudley*, owned by Master Candish and captained by Stephen Seaver, which brought into Portsmouth a Portuguese prize brazilman with a cargo of sugar and cotton.

The absence of any further information on these trading ventures makes all comment purely conjectural. Cavendish's kinsman and associate Henry Seckford was a hard, astute business man who had been dabbling in trading ventures, privateering and piracy for twenty-odd years, and may have suggested this method of recruiting his fortunes. It is noticeable that Cavendish had continued to use the *Desire*, and that he had apparently bought or built the *Roebuck* out of his profits. The *Galleon Dudley* raises an interesting point, because it had belonged to Leicester, and further proof of the connexion is found in a piece of Court scandal. In 1591 Robert Dudley, the Earl of Leicester's son, was sent away from Court 'for kissing Mistress Cavendish'—Thomas's sister Anne, a maid of honour to the Queen, who later married Dudley. He was a known admirer of Cavendish, and Monson considers this a reason for his own voyages. It is possible that the ship was partly his. The captains of the ships appear to have entered Cavendish's service after the circumnavigation: Cocke at least stayed with him in his last voyage as captain of the *Roebuck*. General considerations apart, the one sure fact which emerges is that, contrary to previous assumptions,¹ Cavendish did not 'consume his whole estate in extravagance and following the Court', or 'squander his patrimony', or 'being without employment and a man of gallantry... impoverish his estate'. He was undoubtedly excitable, handsome, gallant, witty and conceited, violent and proud if thwarted, and often dangerously near breaking point; but his shrewd, hard-headed ancestors in him combined with his early training in law and estate management to produce the subtle and careful, if somewhat illegal methods he used to raise money. He was no wild, careless youth squandering wealth in happy profligacy, but an inveterate gambler who knew the risks and took them cold-bloodedly, and who had gambler's luck until the end. Those who have given him facile condemnation underrate his intelligence, which did not fail him, and his nerve, which did.

Whatever the private reason, by April 1591 preparations were well in hand for a third voyage on a much larger scale, employing five ships; the *Galleon Leicester*, which may have been a royal ship leased or loaned to him; the *Roebuck*, under Captain Cocke, his own ship; the *Desire*, captained by

¹ Cf. the biographical accounts of Southe, Lediard and many subsequent writers who have repeated their opinions without verification.

the famous and brilliant Arctic navigator, John Davis, also Cavendish's own; and two smaller ones, the *Black Pinnace*, and the *Dainty*, a bark of Adrian Gilbert's and John Davis's, whose captain was Randolph Cotton. The Gilbert-Davis connexion hints that the North-west Passage was the main object of this voyage, and Cavendish may have wished to investigate the Pacific trading bases again for official backers. No definite information has been found.

There is an air of finality about the monetary deals preceding this voyage which is inexplicable. Perhaps he was staking everything on the possibility of enormous returns, or perhaps he was planning fresh land ventures in a new district on his return, for his interest seemed turning towards Hampshire and Dorset; Ireland also offered possibilities. It is fatally easy to be wise after the event, however. In April 1591 he sold four north Suffolk manors to John Wentworth¹ and Humphrey Seckford for £2000; and later he mortgaged Grimston Hall, Morston Hall,² Stratton and other Trimley lands to Charles Cornwallis for an unspecified and probably large sum. This is the most frustrating fact among the financial dealings I have yet discovered, for the document, on vellum, bearing the self-conscious Cavendish signature, existed in Suffolk among the Fitch papers a century ago, and was sold with them, to disappear completely. There were probably further sales or recognizances, which I have not yet traced. In addition, John Davis³ and his friends advanced £1100, Carew Raleigh held a bond for £200, two London merchants had a bond for £250, and Henry Seckford, Sir Henry Palmer,⁴ John Cocke,⁵ Master Heton, Eliot of Ratcliff, Richard Cocke and others advanced at least £420 in bills of adventure on the victuals. The scale of preparations was large, and indicates an important voyage, which was undertaken under the Queen's writ of protection issued at the end of June 1591.⁶

The voyage got off to a bad start. Andrewes, who was supervising the fitting out, was concerned in a murder charge; one ship sank in the Thames through carelessness;⁷ and Cavendish advanced £1500 to victuallers, many of whom absconded, while others supplied inferior stores. He was also unfortunate in his crew; some deserted and the expedition was delayed while attempts were made to round them up from taverns and stews. Others took a retaining fee of £5 or £10 and disappeared for ever.

The sailing finally took place on 26 August 1591, and by the time the

¹ Copinger, 'Suffolk Manors'.

² See the Caley MSS. and Fitch Sale catalogues in the Ipswich Public Reference Library.

³ Davis, *Seaman's Secrets*.

⁴ *Purchas his Pilgrims, 1591 Voyage*.

⁵ Customer of Southampton.

⁶ S.P.D.E. 12/237/53-4.

⁷ G. B. Harrison, *Elizabethan Journal* and *Purchas 1591 Voyage*.

fleet reached Brazil trouble from mutiny, hunger and unseaworthiness already threatened. The Portuguese were ready for them, and returned their attacks, so relief was hard to obtain. The weather in the Magellan Strait area was intolerably fierce, and despite determined attempts to enter the Strait they were beaten back each time, to the detriment of their sails and rigging. Eventually, by accident or intention, the fleet separated: the *Black Pinnace* and the *Dainty* sailed for home; the *Desire* spent fruitless months at Port Desire, waiting for Cavendish, until in great extremity they returned to England, an almost total loss, on 11 June 1593; the *Roebuck* and the *Galleon Leicester* kept company back to Brazil, threatened with defeat, starvation and mutiny; then the *Roebuck* deserted, and Cavendish in the *Galleon* sailed on towards St Helena, alone.

By now he had run the gamut of all the emotions, and his fundamentally violent temper showed itself in ferocity of manner and delusions of persecution, which alienated and distressed all his company. He could no longer control his nerves or his imagination, but his intelligence, personality and will remained unimpaired. Perhaps no one else could have driven that crew so far on an unwished course without open mutiny. His last letter,¹ written to Sir Tristram Gorges in June 1592, shows his inner conflict in one of the most curious documents ever penned. His clear account of his finances and commitments is interspersed with violent denunciations of his company; instructions regarding the payment of his debts, the future of his ships, and the disposal of his remaining property alternate with emotional outbursts of self-pity, abuse, misery and pathetic detailed records of his wanderings.

The ship arrived home within the next year, without Cavendish. The circumstances of his death are unknown; and his legal juggling left very little for his executors to settle. Within ten years he was forgotten, except in the law courts where his mother's relatives endeavoured to wrest the remains of her fortune² from his creditors. (The Chancery documents which record these lawsuits are one of the main sources for his preparations.) As yet the settlement of his estates is obscure. He chose Sir Tristram Gorges as executor,³ but Anne Dudley took out letters⁴ of administration.

So ended a career of brilliant promise, on which Fuller's comment renders all others superfluous—'Pity so illustrious a life should have so obscure a death.'

¹ Printed with slight omissions in *Purchas*. Sir Richard Hawkins in his *Observations* mentions this voyage.

² C.P. Bundle CC7/42.

³ Last letter, *Purchas*.

⁴ Administration Acts Book p. 49.

LORD SANDWICH, RUSSIAN MASTS, AND AMERICAN INDEPENDENCE

By Frank Spencer

LORD SANDWICH as First Lord of the Admiralty from 1771 to 1782 was long given more than his fair share of the blame for the naval maladministration, corruption, and faulty strategy which produced the British Navy's humiliations in the War of American Independence. Publication of his Admiralty papers¹ has now righted those injustices, and shown the unusual efficiency of his régime compared with those of contemporary First Lords, but Sandwich, nevertheless, did make one serious error of judgment for which he alone, among the members of the North Ministry which lost the war, was to blame. This blunder was made when Sandwich was Northern Secretary of State, ten years before the war began. It has not hitherto been appreciated, nor was it realized at the time, for neither Sandwich nor anybody else could have foreseen the consequences of his negotiation of the 'contraband' clauses which became Articles X–XI of the Anglo-Russian commercial treaty of 1766.

At the instance of the British Government, these clauses repeated the provisions of the corresponding Articles XI–XII of the Anglo-Russian treaty of 1734. Article XI of that treaty had provided that 'the subjects of one or the other of the parties may freely go, come, and trade in all the states which are, or may afterwards be, at war with one of the parties, excepting places actually blockaded or besieged, provided that they carry no munitions of war to the enemy; in the case of all other goods, the vessel, the passengers, and the goods, shall be free and without impediment'. Article XII had declared: 'Cannons, mortars, fire-arms, pistols, bombs, grenades, bullets, balls, fuses, flints, matches, powder, saltpetre, sulphur, breast-plates, pikes, swords, sword-belts, pouches, cartridge-bags, saddles, and bridles, beyond the quantity needed for the use of the ship, or for every man serving on the ship, or the passengers, shall be deemed munitions of war, and if found, may be seized according to law; but neither the ship, the passengers, nor the other goods shall be detained for that reason, or prevented from continuing their voyage.' These provisions, writes D. K. Reading, the authority on the 1734 treaty, represented those normally operating at the time, and occa-

¹ G. R. Barnes and J. H. Owen, *The Sandwich Papers, 1771–1782*, Navy Records Society, 4 vols, 1932–38.

sioned very little, if any, discussion during the negotiations for the treaty. Russia implicitly accepted the doctrine that free ships gave freedom to all goods carried, unless specified contraband, patently benefiting Britain (the party likely to engage in maritime commerce with a third power). British insistence on the strict definition of contraband probably grew out of Peter I's attempt in 1719 to cripple Anglo-Swedish trade by declaring as contraband not only powder and fire-arms, but salt, grains, hemp and everything appertaining to a fleet. In 1734 Britain was 'running no risk of meeting a similar situation in the future'.¹

Certainly the major points at issue in those articles were whether naval stores were contraband of war, and whether the flag of neutral carriers gave protection to enemy goods, except contraband, on board them (the doctrine of *free ships, free goods*). Both questions, however, have had a long and complicated history, the European states varying their attitudes towards them as interests of the moment dictated, and the matter was not as clear-cut in the 1734 negotiations as Mr Reading supposed. The usual British attitude towards naval stores since the time of the Spanish Armada had been to treat them as contraband, and the Russo-Dutch treaty of 1715 took the same view—but at other times, not least in 1780, Russia and Holland thought differently.² Then, although Britain and Holland had largely elaborated the doctrine of *free ships, free goods* in the mid-seventeenth century, when striving to develop merchant marines which could at least carry their own respective goods, by the beginning of the next century the growth of British naval power had ended the attractiveness of the doctrine for Britain as a general principle. By 1734 Britain was no upholder of the sanctity of neutral carrying trade, and in the course of her next (1739–48) and subsequent wars, she strove to avoid honouring such obligations as she had contracted to other powers before 1713 in consequence of that doctrine.³

The fact remains that the terms of the 1734 articles do pay a kind of lip-service to the doctrine of *free ships, free goods*, while the British prize judge ruled in the *De Providentia* case of 1747 that Article XI entitled Russia to carry naval stores to the enemy, and the Lords upheld his ruling.⁴ There may have been miscalculations on the British side as to the interpretation of the articles when they were being drafted, but there was possibly also

¹ D. K. Reading, *The Anglo-Russian Commercial Treaty of 1734*, Yale Historical Publications, Vol. xxxii, 1938, pp. 176–7. The treaty is printed (*ibid.*) in its original French, pp. 302–13, and Arts. XI–XII given above have been translated by me from that version.

² See for these points C. J. Kulsrud, *Maritime Neutrality to 1780* (Boston, Mass., 1936), p. 284.

³ Compare R. Pares, *Colonial Blockade and Neutral Rights, 1739–1763*, 1938, ch. III.

⁴ Case cited by Kulsrud, p. 285, though he does not note the significance of this judgment in respect of the 1766 contraband articles, and hence of the Armed Neutrality of 1780.

equivocal dealing on their part, which the official British documents utilized by Mr Reading do not reveal. They may be incomplete—many eighteenth-century diplomats and officials retained official documents relating to their transactions—and there may well be private papers which would throw new light on these points.¹ Certainly in 1734, at the height of Walpole's régime, with its avoidance as far as possible of foreign commitments (and hence, it was hoped, of wars), with Russia engaged in the Polish Succession War, Britain may well have been anxious to preserve her neutral rights. She would hardly, however, have been so anxious as to throw away her belligerent rights, and most probably she hoped to have things both ways. That she did not manage to do so was not vitally important in the wars of 1729–48 and 1756–63, but the basing of the 1766 contraband articles on those of 1734 was to cause grave difficulties (though some were inevitable in the event of Russian neutrality during a maritime war in which Britain was engaged). It was understandable that Britain should wish to avoid commitments which would restrict the use of her naval predominance in war time, and would therefore seek to preserve a wide latitude in this respect in her treaty obligations. This stratagem, however, could safely be adopted only when British naval strength permitted the overriding of neutral protests, as was largely the case during the French Revolutionary and Napoleonic Wars (Castlereagh, it is well known, excluded from the negotiations leading to the Vienna Treaty all discussion of the question of maritime rights). But in the War of American Independence, Catherine the Great forced Britain to let Russian ships go unmolested, though Britain evaded explicitly renouncing her claims; and as both sides based their arguments to some extent on the 1766 contraband articles, the origin of their conflicting interpretation requires investigation.

The interpretation made in Catherine's Declaration of Armed Neutrality in March 1780 was foreshadowed in September 1764, when the negotiations for the 1766 treaty got actively under way. A Russian draft commercial treaty then shown to Lord Buckingham, the British envoy in St Petersburg, added masts, the commodity most needed by the French Navy in war time, to the list of contraband, but specifically excluded other naval materials, Buckingham rightly concluded that under such conditions this invaluable masts concession could not be accepted.² Richard Phelps, an Under-Secretary of State to Lord Sandwich, wrote on Buckingham's minutes on the draft a private memorandum, which is of great interest in view of the British Government's reaction when Gross, the Russian envoy

¹ Compare below.

² Lord Buckingham to Lord Sandwich, 25 September 1764, enclosing Buckingham's minutes on the Russian draft treaty, Public Record Office, State Papers 91/74.

in London, formally presented the Russian draft treaty to Sandwich in January 1765. In the projected Article XI of the draft, Phelps observed, Buckingham 'proposes to leave out the word *masts*, as being [*sic*—'although'?] an article which the French stand most in need of in time of war', while 'In the Treaty of 1734 by the 11th Article all goods are allowed to be transported into an enemy's port, town, etc., except such as are blockaded, provided they are not warlike stores; and in the 12th article, those are expressly specified to be cannon, mortars, fire-arms', etc. (repeating the 1734 list). Phelps, therefore, realized that naval materials could not be regarded as contraband of war under the terms of the 1734 treaty, although his Government took the opposite view in the negotiations which followed.¹

Article X in the Russian draft first repeated the terms of the corresponding Article XI of the 1734 treaty, except that after 'blockaded' it added 'by sea and land', but then went on to insist that after warships and privateers had carried out their searches of inspection for contraband, they must 'allow freedom of passage to neutral vessels leaving the ports of powers at war with one or other of the High Contracting Powers, carrying merchandise belonging to their subjects'. Article XI added masts to the 1734 contraband lists, but then added after repeating the other provisions of the 1734 article: 'It is further agreed that grains, wood for building, hemp, linen, sails, tar and all other goods which may serve for other uses than those of war, besides those which have been excluded above, are not to be considered contraband, and if contrary to all expectation, the merchant ships carrying these goods which are not prohibited, are arrested on their course by the privateers or warships of one or the other High Contracting Powers, and conducted anywhere against the will of their masters, they shall not only be released without delay at the demand of the injured party, but the masters and owners shall be recompensed.'²

The Board of Trade, to which Sandwich submitted the draft treaty, referred it for expert legal opinion to the Advocate General, James Marriott, whose consequent exposition of the official British opinion on maritime rights greatly influenced the instructions for the negotiation of the commercial

¹ Phelps's memorandum (undated, but most likely of October 1764), British Museum, Stowe MSS. Vol. cclii, ff. 105–6. The official files of the Russian correspondence for 1764–5 in the Public Record Office, it should be noted, give no indication that any British official concerned with these negotiations had ever doubted whether ships' timber and naval stores could be treated as contraband under the 1734 articles. Phelps may have changed his mind on this point later, in deference to his superiors' opinions, or he may have forgotten his memorandum when immersed in the mass of legal and commercial papers produced in early 1765 in response to the Russian draft treaty.

² Translation from the French original of Articles X–XI of the Russian draft treaty given to Sandwich on 3 January 1765, State Papers 91/75. Compare above, the 1734 provisions.

treaty which were sent to Buckingham's successor, Macartney. But quite apart from that, its unusual frankness entitles it to be better known.

Marriott's report¹ opened with the fundamental British proposition that British treaty articles of contraband and search differed, and a commercial treaty with one country was therefore admitted to be no rule for one with another country, but depended purely on the political and economic relations and aspirations, and the produce and manufactures of the signatory powers at the time of contracting. Britain, in the present state of commerce of the northern maritime powers, could not gain but might greatly suffer from the stipulation of *free ships, free goods* seemingly implied in the Russian draft. Britain had introduced that doctrine, for political advantages at the time, into treaties with Portugal, Holland, and France, but always as 'a privilege expressly stipulated to them', though other maritime powers were trying to obtain it by implication. It arose from a special compact, and not from the Law of Nations, which it superseded, and which considered all enemy property confiscable wherever found, and treated neutrals in some degree as enemies for protecting enemy persons and properties. By the pure Law of Nations, 'no special compact existing, all merchandise laden on account and risk of enemies, or on account and risk of neutrals, if supplying the enemies with stores of war already fabricated or *apt for war*, are confiscable and contraband'. 'The Law of Nations, *which is the usage of nations*', and therefore less easy to interpret than treaties based on civil law, 'has varied as any one maritime power at different times has possessed the ascendant, and *given the law to others*'.²

Marriott then turned to the specific points at issue in the draft articles. Russia's natural produce and manufactures, being chiefly naval materials, could not be allowed unhindered carriage in war time to the ports of Britain's maritime rivals, especially France, who since the loss of her North American supplies could not equip a fleet without Russian materials. It was important for Britain's interests, perhaps essential for her preservation, to prevent such commerce as much as possible in war time, despite constant claims by neutrals, as constantly rejected by superior belligerent parties, to carry their own natural produce and manufactures to the enemy, especially if they were *mixti generis, usus ancipitis, nec per se bello apta*, or could serve for other than warlike purposes. These were 'descriptions

¹ Of 12 February 1765, *ibid.* (another copy, sent to Macartney, *ibid.* is dated 4 February, 1765).

² In general, as Pares remarks (*op. cit.* pp. 154-6), the British maintained both that a treaty was 'a derogation from the law of nations' and that their treaties were really concessions to the neutrals, while they talked of the law of nations, 'they referred everything unconsciously to the rights of belligerents'. Marriott, as appears above, however, came close to putting this unconscious belief into so many words.

without limitation' and therefore objectionable, while even the most warlike stores had peaceful use (the corollary, if perceived, was not acknowledged—the time for 'total war' had not yet come). Marriott then suggested that despite previous practice, 'it would be more useful in all treaties whatsoever' to describe munitions generally rather than specifically, for specifying one thing made everything unspecified privileged. Declaring that munitions included 'all sorts of warlike instruments and accoutrements' would make the contraband article 'more comprehensive than when it recites a partial detail of military apparatus, in which many articles are omitted and many more will be invented'. The Russian drafting of both articles was loose, and 'might allow *by construction* the privilege of carrying enemy goods,¹ while 'wood for building' might signify ships' as well as house timber. Then, although the fourth Article of the 1674 Anglo-Dutch treaty, whose dangerous provisions the Russian draft Article XI sought to imitate, expressly allowed Holland to carry in war time planks, boards, ships' timber, and all naval stores, yet in the last war the treaty was ignored, and these articles had been detained and sold in England for the use of the British Navy. Marriott therefore proposed, to prevent disputes and difficulties, making the usage 'an article in the Russian treaty, *if it can be obtained*: and it is much better to be expressed now, than afterwards to make Acts of Parliament as in the last war, in the teeth of treaties, on account of necessity, an argument very dangerous and liable to be retorted with disadvantage'. Since the draft made masts contraband, 'ships' timber carried fabricated (as it often is in knees and ribs etc.) and planks of proper thickness and dimensions for ships of war, and large anchors, sails, and cables for the same', could also be made contraband, and if not made so generally, then 'made so in the particular cases of being destined to the royal docks or ports of the states in enmity, whether blocked up or not'.² In the case of any ports, licences should be carried by the vessels declaring destinations upon oath, and giving security. Naval stores so carried would frequently fall into the hands of British cruisers, while stipulating what 'seems apparently much in favour of the neutral: restitution of ship, with freight', in cases of confiscation 'would not only prevent appeals and vexatious complaints by governments, but would occasion almost all the naval supplies going to enemies to fall in the way of our cruisers' by tempting

¹ 'Their' at the end of Article X, he observed might be taken to refer to 'powers at war' instead of to 'High Contracting Powers'; Article XI did not distinguish between neutral and belligerent non-contraband property; and if Britain for any reason accepted the Russian list of privileged goods, their carriage ought to be controlled by Article X in the case of ports besieged or blockaded as being then contraband.

² Thereby, though Marriott did not say so, avoiding the dangerous question of whether the belligerent power could make effective the blockade of enemy ports which it had proclaimed.

masters and owners to 'put themselves in their way, and so to perform but a very small part of their voyage with an equal advantage'.

The Board of Trade and Sandwich warmly applauded Marriott's arguments. Sandwich instructed Macartney on 15 March 1765 that the Russian attempt to establish the doctrine of *free ships, free goods* by the tenth and eleventh articles must not be tolerated. The best method of avoiding disputes 'upon a subject where it will be difficult to draw the line' was to reproduce the 1734 articles, but if that was impossible, Macartney was to be guided by Marriott's report, which gave 'the clearest reasoning, and fullest instructions'. Russia's offer to include masts among contraband goods bound for enemy ports in war time was 'certainly an advantageous stipulation for this country, if the Articles were to be agreed to as they stand in the Russian project', but those were inadmissible. In redrafting them, Macartney must avoid leaving Russia an opportunity to claim, because of the way in which masts were specified, free traffic for other unspecified materials equally necessary for warships and justly confiscable when bound for enemy ports. If he could not reproduce the 1734 terms, he must preserve their spirit to the utmost, but was on no account to admit the articles as they stood in the present Russian project.¹

Macartney obtained what Sandwich had required of him. By the new Article X of the 1766 treaty it was stipulated that: 'The subjects of the two High Contracting Parties shall be at liberty to go, come, and trade freely with the states with which one or other of the parties shall at this or any future time be engaged in war, provided that they do not carry munitions to the enemy. This liberty, however, is not to extend to places actually blockaded or besieged, either by sea or land. At all other times, and with the sole exception of munitions, the aforesaid subjects may transport to these places all sorts of merchandise, as well as passengers, without the least impediment. While searching merchant ships, men of war and privateers shall behave as favourably as the state of war can possibly permit towards the most friendly neutral powers, observing as much as possible the principles and rules of the law of nations which are generally acknowledged.' The new Article XI repeated the 1734 list of contraband goods, and recapitulated, with insignificant verbal differences, the other provisions of Article XII of that treaty.²

Macartney explained to the Duke of Grafton, who had succeeded Sandwich as Northern Secretary of State, that the contraband articles had been 'long the great object of dispute and discussion' with the Russians. He

¹ Sandwich to Macartney, 15 March 1765, State Papers 91/75.

² Articles X-XI from the original French of the Anglo-Russian commercial treaty of 1 July 1766, State Papers 91/77.

had managed to carry out Sandwich's instructions, and kept 'as nearly to the Law of Nations, as the necessity of the case will allow, which necessity the most powerful in time of war are generally the best judges of'. He had 'declared the negotiation at an end' if the Russians did not drop their proposal to specify ships' timber and naval stores as non-contraband, 'which after violent litigations they consented to. We are now judges of what shall be esteemed munitions.'¹

It would, however, have been better for the British in the long run had they accepted what the Russians originally offered. One can only suppose that the *De Providentia* case had been forgotten. If so, Britain was to pay dearly for it, and for Macartney's easy optimism that she was now the judge of what constituted munitions of war. In logic, the British argument that ships' timber and naval stores were contraband was sound ('If one Dutch ship carries masts', wrote Marriott later, 'another anchors, another sails, another a ship's frame, a whole fleet may go by detail from Holland to the King of France's service.'²) What mattered, however, was not logic, nor international law, but the power to enforce one's definition of contraband in the light of treaties, and of prevailing political and diplomatic relationships. Even from the standpoint of the 1766 treaty, Britain's case during the War of American Independence against Russia's sale and carriage of ships' timber and naval stores to the Bourbon Powers was weak, although Sandwich seems never to have realized his error of 1765; but in any event, after the colonial rebellion had both led Britain into an exhausting war and cut off her main supply of timber and naval stores, Russia was certain to exploit her advantage. The British Government tried hard not to antagonize Catherine, and, in fact, the actual stopping of her merchantmen was not her chief concern (the few stopped were soon released). Her real objective was to improve Russia's commercial and maritime position, and to secure political advantages, and in view of British naval weakness after France's entry into the war in 1778, Russia was for some time remarkably forbearing. The reason for that is to be found, as one might expect, in her view of her interests, and in the general European situation. Jealous, even apprehensive though the neutrals were of British maritime and commercial preponderance, they could not desire her downfall. As the Danish statesman Guldberg put it: 'The Bourbon Houses cannot establish their pre-ponderance without disturbing the balance of power. No man can wish to see Louis XIV's flourishing period restored.' Russia, with designs on the

¹ Macartney's annotated copy, 'No. 4', of the abortive treaty of August 1765 which preceded the final one of 1766. The contraband articles were identical in both treaties.

² Quoted from Sir Francis T. Piggott, 'Ships' Timber and Contraband of War', *Quart. Rev.* ccxxxvi (1921), p. 110.

territories of France's ally Turkey, despite the recent Franco-Russian *rapprochement* could not wish to see Britain seriously weakened. Encouraging the Swedes to involve themselves in the affairs of the Armed Neutrality would prevent their interference with Russian designs in Northern Europe and Turkey. Neutral rights, as a general principle, did not much interest Catherine, who was, besides, personally well-disposed to Britain in the colonial issue.¹

In any case, because of her concentration before 1775 on colonial production of ships' timber and naval stores, and the post-1763 neglect of her navy, Britain was rapidly in such difficulties as to be unable to enforce the blockade of French ports which she had declared. The most important commodity which she could not prevent from reaching France was, of course, masts—which Russia in 1765 had offered to make contraband, but which, of course, she was now selling to France. It is, however, G. R. Albion's conclusion from British dockyard mismanagement before 1776 that: 'the British Navy suffered more severely during the war from the mast shortage arising from its own negligence, than the French marine suffered from England's aggressive policy' in attempting to cut off its supplies.²

The complications which finally produced the Armed Neutrality began in September 1778, when British warships and privateers began to bring in neutral ships bound for France, now Britain's declared enemy. The Dutch and Russian envoys in London at once protested. The British Government's main objective was to cut off French naval supplies (the Admiralty even bought arrested cargoes of a quality too poor for its use, though not by the French, but few of the great masts so badly needed by Britain were so obtained) and it persisted in this policy until the Armed Neutrality ended such hopes. Clear warnings preceded the Declaration itself. Panin, the Russian Foreign Minister, told Harris that Russia could not 'see with indifference' British molestation of Northern commerce, while Britain's 'vague and uncertain definition' of contraband 'exposed almost all the productions of these parts' to sequestration. British contraband regulations must be altered, for, Panin added, smiling, 'being accustomed to command at sea, our language on maritime objects was always too positive.'³ Yet despite Swedish, Danish, Prussian, Dutch and French

1 For these points compare Kulsrud, pp. 295, 326-9.

2 G. R. Albion, *Forests and Sea Power*, Harvard Economic Studies, Vol. xxix, Harvard University Press, 1926, p. 194, and cf. his figures for Riga mast exports from 1778 to the end of September 1782: Holland, 1855; Britain, 996; France, 868; Spain 405; Portugal, 297; Denmark, 199; and Genoa, 29 (*ibid.*, p. 193). All these masts went to the navies of the states concerned, except that about 600 of the masts for Holland and all those consigned to Genoa went to France. Britain's masts were much larger and more valuable than the others).

3 Harris (St Petersburg envoy) to Suffolk, 31 December 1778, State Papers 91/102.

pressure for active measures, the Russians limited themselves to such warnings for some time (though Panin's smile soon disappeared). In the summer of 1779 Panin, while admitting both the legality and the necessity of Britain's cutting off military and naval stores from the enemy, requested their more exact definition, brushing aside Harris's attempt to include in contraband all goods, of whatever kind, necessary for war, with the retort that Britain took 'too great a latitude' in defining contraband, and might thereby displease her friends¹—an unfriendly Russian attitude which Harris ascribed to the machinations of Prussia and of other enemies to Britain.² The North Ministry, preferring to close its eyes to unwelcome truths, readily believed such explanations, and was still slow on the uptake even after Spain's entry into the war (June 1779) produced a firmer Russian attitude towards Britain. The March 1780 Declaration of Armed Neutrality was a bombshell in London. The British, while aware of Catherine's growing exasperation at interference with her shipping, had (not without reason) expected her anger to be directed against Spain, recently guilty of grossly infringing Russian neutral rights. The pained reaction of Lord Stormont, the then Northern Secretary, was that the Declaration's insistence upon *free ships, free goods*, must distress Britain, Catherine's friend, and favour the Bourbon Powers, 'even secretly or openly hostile' to Russia.³ It was July 1790 before he realized that the Declaration, in form directed to all three belligerents, was in its entirety directed against Britain.⁴

The Declaration proclaimed that the principles which Catherine meant to follow were based on 'the primitive law of the peoples', treaty obligations, and public engagements, and were reducible to the following points: neutral vessels might navigate freely from port to port and along the coasts of belligerent states; belligerent property, excepting contraband, should be free on board neutral vessels; contraband goods were those listed in the 1766 treaty; a blockaded port was one where the attacking power has stationed its vessels sufficiently near and in such a way as to render access thereto clearly dangerous; and lastly, 'these principles shall serve as a rule for proceedings and judgements as to the legality of prizes'.⁵ Greatly agitated, Stormont wrote to Harris that the Russian arguments falsely laid down 'as a principle of the Law of Nations, *that* which is a manifest variation which some states have agreed to make by particular specific engage-

¹ Same to same, 3 June 1779, State Papers 91/103.

² Compare, in this respect, Harris's despatches of 22 January and 16 July 1779, *ibid.*

³ Stormont to Harris, No. 21, 11 April 1780, State Papers 91/104.

⁴ See same to same, 18 July 1780, State Papers 91/105.

⁵ The Declaration is printed in J. B. Scott, *The Armed Neutralities of 1780 and 1800*, Carnegie Endowment for International Peace (New York, 1918), pp. 273-4.

ments'. Authorities on the subject, and the constant practice of European Courts of Admiralty, had established that by the Law of Nations enemy goods, whether or not contraband, were legal prize on neutral ships, whereas lawful goods of a friend on enemy ships were free. Specific agreements to the contrary (e.g. in the 1674 Anglo-Dutch treaty) were the exception, and the general principles of the Law of Nations were the rule where no particular treaty existed, while treaties, differing from each other, could not be reduced to 'one measure or rule'. Harris, however, was to reply to these 'wilful' errors, 'made with a very bad design,' in general terms and with great delicacy. He was to show that Russia's proposal was against her own interests, as she often shipped her goods in British, French, and Spanish merchantmen. He was to avoid explicit discussions with Panin, taking care to say nothing which could be construed as British acceptance of the inadmissible principle of *free ships, free goods*.¹ But Harris, naturally, could not convince the Russians that they did not know their own interests, though the British Government did manage to avoid explanations—not, of course, from a 'position of strength' this time. It evaded acknowledging, though it dared not dispute, the claim that free ships made free goods, and had helplessly to allow masts, spars, and naval stores from Russia (but not from other neutrals) to pass to France.

'Had the English plan been carried out with the original rigor', writes Albion, 'Brest and Toulon might have been emptied of their timber, tar, and hemp; but the relaxation of seizures of Russian ships permitted plenty of these stores to arrive from the Baltic... Russia's intervention in the name of neutral rights saved the French mast supply in 1780.'² If the crucial factor in the success of the American colonies was the aid given by France, as many good judges have insisted, it would not be too fanciful to add that this intervention also saved American Independence, were it not for the fact that comparatively little interference with Russian trade took place before the Declaration, and that European difficulties over neutral rights were, in the last analysis, only a secondary factor in the loss of America. Once the political issue of independence had been fairly joined, and a nation had passed through the fire at Valley Forge, nothing short of independence could have settled the American question. Had Britain won the war which began at Lexington, it must have been only the first round in a longer contest, unless peaceful secession had later taken place, as it might well have done under the relentless pressure of events.

Nevertheless, serious consequences enough flowed from Sandwich's rejection in 1765 of Russia's offer to make masts contraband, for this must

¹ Stormont to Harris, No. 17, 11 April, 1780, State Papers 91/104.

² Albion, pp. 192, 194.

have seriously weakened the French fleet if it had been implemented. This was one of an accumulation of miscalculations for which British sailors paid dearly after 1776. Yet Sandwich could not have been expected to foresee the situation which arose then of Britain, deprived of her chief supply of ships' timber and naval stores by rebellious colonists assisted by the Bourbon Powers, being forced to try to rebuild a Baltic market under the most disadvantageous conditions. Then, the parsimonious economizing on the navy which began in 1763, and other errors, born of myopic presumption and strategic incapacity, which were committed by successive British ministries after 1763, overshadow the mistaken view of the interpretation of the 1734 and 1766 contraband articles, and the belief that Britain, in the last resort, would be able when necessary to 'give the law'. In any case, Britain's withdrawal in 1780 from an old and advantageous position was only partial, never explicit, and always intended to be merely temporary. So, in the event, it proved to have been. Thirteen years later, Britain was again laying down the law, in a maritime sense, to the rest of Europe, and this time with the warm approval of the authoress of the Declaration, who agreed that not only masts, ships' timber, and naval stores, but even foodstuffs were contraband. This progress towards the concept of total war had always been implicit in the British attitude towards maritime rights, but in the life-and-death struggle for national survival against Revolutionary and Napoleonic France the British had no choice. Nevertheless, it was appropriate, if at first unpalatable, that the British Navy should have suffered its only failures since it had achieved pre-eminence in what had become, by 1778, an unjust and punitive war.

RECORDS

THE HONEYMOON VOYAGE OF 1764

Contributed by Commander W. E. May, R.N.

The identifying of the incident shown in a painting by John Cleveley the Elder as that of the honeymoon voyage of 1764, brought to light matters which may not be without interest.

The picture, which is the property of N. Aldrich-Blake Esq., depicts three yachts under a threatening sky. The first wears a standard at the masthead and the second one at the starboard quarter, while two sloops are stationed one on either bow and smaller vessels are visible in the distance.

Paymaster-Commander C. M. Gavin in *Royal Yachts*, page 85, follows J. Charnock in *Biographia Navalis*, Vol. v, page 373, in stating that the Prince of Brunswick was brought to England in 1763 by Captain Peter Denis in the *Royal Charlotte*. However, the log of that yacht shows that she lay at Deptford throughout the winter of 1763-4; while in that of the *Augusta*, Captain Charles Wray, we read:

January 9 1764. In Helvoet Road . . . at 7 a.m. His Serene Highness the Hereditary prince of Brunswick embarked with his Attendants & Baggage. D° we saluted his Highness with 7 Guns.

January 10 1764. . . . at 10 weighed and came to Sail in Company with the Happy Sloop and Prince of Wales pacquet.

January 13 1764. At 3 anchored in Harwich Harbour. . . . At 4 His Serene Highness the Hereditary prince of Brunswick and his Attendants disembarked D° we saluted his Highness with 7 Guns. . . .

(P.R.O. Adm. 51/3776)

The Prince reached London next day and on January 16 was married to the Princess Augusta, sister of King George III. The couple left London on the 26th and travelled to Harwich, where they arrived between 2 and 3 p.m. on the following day. The weather was tempestuous so they lodged with Mr Davis, Collector at the port, until it should moderate. On the morning of Sunday 29th, the weather having improved, they embarked, the Prince in the *Augusta*, the Princess in the *Fubbs*, Captain Richard Spry. It had been intended that the yachts should leave in the afternoon but, the weather having again deteriorated, they remained until Monday. They then sailed with the yacht *Katherine*, Captain Alexander Hood, and the sloop *Cruiser*, Captain John M'Bride, to escort them and to carry some of the baggage. It was reported that the Princess was 'in the greatest spirits imaginable'. The sloop *Happy*, Captain Hugh Bromedge, joined the other vessels in the 'Rowling Ground'. She had been delayed coming round from the Thames by lack of a pilot and had finally taken the mate out of a collier to act as one. The sloop *Peggy*, Commander James O'Hara, was also to have been one of the escort, but she had lost both her topmasts in the bad weather encountered on the way to Harwich, and though spare spars were available she had insufficient time to complete rigging them.

The Prince's standard was hoisted at the starboard quarter of the *Augusta* and this unusual arrangement is shown in the painting.

That there had been some difficulty over the provision of the standards for the yachts may be judged from the following correspondence:

Admiralty to Navy Board, 17 January 1764

We do hereby desire and direct you to cause proper Colours to be prepared as soon as possible, for His most Serene Highness the Hereditary Prince, and her Royal Highness the Princess of Brunswick Lunenburgh, in order to be borne onboard such one of His Majesty's Yachts wherein their Highnesses shall embark to take their passage to Holland. (N.M.M. Adm. A/2555.)

Admiralty to Navy Board, 18 January 1764

It being intended that his most serene Highness the Hereditary Prince of Brunswick Lunenburg, and her Royal Highness the Princess, should proceed over to Holland in separate Yachts; We do hereby desire and direct you to cause proper Colours to be provided with all possible dispatch, to be hoisted onboard each of the Yachts wherein they shall embark, instead of the Colours which were directed to be provided by Our Order of yesterday's date.

Endorsed:

18th Jan. 6 p.m.

The Contractor instead of attending tomorrow, to come to the Board immediately. In the mean notice to be sent him that two Flaggs are to be got ready in the shortest time that can be. Messe^r brings answer that the Contractor is from home, & cannot be here till tomorrow.

(N.M.M. Adm. A/2555).

Navy Board to Admiralty, 19 January 1764

The Right Honble the Lords Comm^{rs} of the Admiralty having been pleased by their order of yesterday to direct us to provide proper Colours to be hoisted on board each Yacht, wherein his serene Highness the Hereditary Prince of Brunswick and her Royal Highness the Princess should Embark, and having given Mr. Wilton the Contractor for Colours directions to go immediately in hand with them, he informs us, that upon his application to the Herald office for the Arms of her Royal Highness he is acquainted, that there are none established for her, and must wait the King's pleasure before any can be settled by that office, with which we desire you will acquaint their Lordships, that an immediate application may be made for that purpose; otherwise the Standards cannot be compleated in time.

We have sent Mr. Wilton with a Sketch of the Hereditary Prince's Arms, taken from the King's Coachmaster, for their Lordships approbation; as no trace thereof could be found in the Herald's office.

Endorsed:

Read 20th Janry. The E. of Egmont acq^d the King herewith & order will this day be given to the Earl Marshal thru' the Secy of State appointing proper Arms for H.R.H. the Princess of Brunswick Lunenburgh.

Mr. Whitton told.

(N.M.M. Adm. B/173)

Admiralty to Navy Board, 24 January 1764

I am commanded by my Lords Commissioners of the Admiralty to signify their direction to you to cause the Flags you have been ordered to provide for Her Royal Highness the Princess, and His Serene Highness the Prince of Brunswick, to be sent to Harwich with all possible expedition, that which is intended for the Princess to be delivered to Captain Spry of the Fubbs Yacht, and that which is designed for the Prince to be delivered to Captain Wray of the Augusta Yacht, their Highnesses being to embark on board those Yachts on Thursday next in the forenoon.

(N.M.M. Adm. A/2555)

It will be noted that though it had been intended that the party should embark on Thursday 26 January they did not leave London until 3 o'clock that afternoon, travelling in separate coaches, the Princess wearing a 'German travelling habit'. Harwich was reached on Friday afternoon and they embarked on the Sunday.

On 23 January the Navy Board had been instructed 'to cause Pilots well acquainted with the coast of Holland to be immediately procured & sent on board his Majesty's Yachts the Augusta, Fubbs & Katherine, in the river'. Apparently sufficient pilots were not available, for while the *Katherine* and *Happy* record having embarked pilots at Harwich the *Fubbs* and also the *Katherine* report taking them on board off the coast of Holland.

The Royal couple were unlucky in the weather which they experienced. It blew a south-westerly gale and they had to lie to, not reaching Holland until 3 February. Some fear was felt

in London as to their safety. The remarks for this voyage in the logs of the five vessels show interesting details which round off the story, so they are given here in full.

Augusta:

29 January. Strong Gales & Cloudy weather these 24 hours at 10 AM Her Royal Highness the princess of Brunswick embark'd on board the Fubbs and hoisted her Standard at the Maintop-mast head D° we saluted her Highness at $\frac{1}{2}$ past 10 His Serene Highness the Hereditary prince of Brunswick embarked on board here and hoisted his Standard on the Starboard Quarter & was saluted by the Yachts &c. which Salute we returned at Noon we unmoored took 2 Reefs in the Maintopsail, and got His Highness' Baggage on board.

30 January. Strong Gales and Cloudy weather these 24 at 11 AM weighd p^r Signal in Company with the Fubbs and Katharine Yachts, the Cruizer & Happy Sloops and the Cartwright and Harrison pacquet, at Noon Reef'd the Mainsail.

31 January. Fresh gales and clear weather the 1st and middle part the latter part Hard Gales and hazy weather at 1 PM brought too at 3 made Sail 6 sail in Company at 5 Orfordness bore NWbW 5 leagues at 8 brought too under a Reef'd Foresail & Mizon at 5 AM made sail, at $\frac{1}{2}$ past 5 brought too at 9 Vere Ship and brought too under a Reef'd Foresail and Mizon. The Articles of War and Abstract of the late Act of parliament were read to the Yachts company.

1 February. Hard gales and Squally weather these 24 hours at 4 PM 6 Sail in Company at 11 lost sight of the Squadron at 6 AM bore away for the Texell at 7 sprung the Mainmast D° we brought too with our head to the Northward at 8 saw the Squadron to Windward D° we made the Signal in Distress & they bore down to us and join'd Company we woolded the Mainmast and at 11 made Sail.

2 February. Hard Gales and squally the 1st part the middle fresh Gales and Cloudy and the latter part Moderate and fair weather at 8 PM sounded in 25 fathom water at 1 AM let one Reef out of the Mainsail at 4 let the 3^d & 2nd Reefs out of the Maintopsail and set it at 8 let the other Reef out of the Mainsail, sounded in 17 fathom water at 10 saw the land bearing SSE.

3 February. Moderate Gales and Clear Weather these 24 hours at 2 PM His Serene Highness the Hereditary prince of Brunswick disembarked D° we saluted his Highness and run into Helvoet pier, where His Highness' Attendants disembarked, at 3 got the Baggage out, D° her Royal Highness the princess of Brunswick disembarked from the Fubbs, at 10 AM her Royal Highness embarked on board one of the States Yachts D° we Manned Ship and gave her Royal Highness three cheers.

(P.R.O. Adm. 51/3776)

Fubbs:

29 January. . . . the Hector Cutters Boat Sunk a Longside with casks of Water for the use of the Yacht at $\frac{1}{2}$ Past 11 am Her Roy^l Highness the Princess of Brunswick Embarked on board Hoisted the Flag and Saluted.

30 January. First part fresh Breezes and Cloudy the middle & latter parts Clear Weather at 11 am came to sail in company with the Yachts, Happy & Cruzier Sloops & a Packet Languard Fort Saluted her Roy^l Highness d° returned the Salute.

31 January. The first part moderate & Cloudy Weather the middle fresh Gales & Hazey the latter part Strong Gales and Squally Weather in Company the two Yachts the Happy Cruzier & a Packet at 3 Pm took in the 3^d Reef in the Main Topsail at 5 Orfordness bore NWbyW distance 4 Leagues at 7 Handed the Main topsail, at 11 Made the signal and brought too, at $\frac{1}{2}$ past 3 am sounded 22 fathoms at 4 split the Iibb D° got it in at 5 Made Sail, at $\frac{1}{2}$ past six Hove too, at $\frac{1}{2}$ past 7 Wore and stood to the Northward at Noon sounded 23 fathoms the Yachts and Sloops of War and Packet in Company.

1 February. Strong Gales and squally weather with rain at 2 Gott out our Flying Ibb, and took in the 2^d reef of the mainsail Struck the mizon Topmast and got the Cross Jack and Topsail Yards down on Deck, d° got the Wingsail down, at 12 lost sight of the Augusta Yacht at 7 saw the Augusta Yacht with a signal of distress wore and stood towards Her at 9 brought too with our head to the Northward Sent the Packet to the Augusta she Returned and Inform'd us she had

sprung Her main Mast but wanted no assistance at that time, at 11 Wore and made sail at noon in Company as above.

2 February. The first part Strong Gales and Squally Weather with rain Middle part Moderate the Latter part mod & fair Weather, The Cruzier Happy and two Yachts in Company at 11 bore away Out 2^d Reef of the Mainsail and 3 & 2 of the Main Topsail Swayed up the Main Yard bent a new Main Iibb at 8 Out first Reefs Mainsail & Main topsail at 10 saw the Island of Scowen SSE distance 5 Leagues at 11 Came on Board a Dutch Pilot.

3 February. The first part Moderate Weather the Midd and Latter Strong Gales and Squally with Rain at $\frac{1}{2}$ past 3 Saluted the Hereditary Prince of Brunswick with 7 Guns on his going on shore Came to an anchor in 9 fathom Water off Helvoet pier at 4 Landed Her Roy^l Highness the Princess of Brunswick d^o saluted Her with 7 Guns Weigh'd and run into Helvoet Pier d^o secured the Yacht a Longside the Pier H^d am Employed Landing the Princess's Baggage, at 11 the Princess Embarked on Board a Dutch Yacht, d^o Man'd the Yards &c^a &c^a & Saluted Her Royal Highness with 3 cheers.

(P.R.O. Adm. 51/378)

Katherine:

29 January. The 1st and Middle parts Fresh Gales and squally w^h Rain the Latter. Fresh Gales and squally At 4 PM His Majesty's Sloop Peggy anch^d here At 10 AM unmoor'd At Noon Her Royal Highness y^e Hereditary Pss of Brunswick Embark'd on board y^e Fubbs, at w^h time a Flag was hoisted on y^e Flag Staff at y^e Main Topm^t Head on board y^e said Yatch. Saluted Her w^h 7 Guns as did y^e Fubbs & Augusta Yatchs.

30 January. The 1st part Fresh Gales & Cloudy, y^e Midd^e & Latter Strong Gales & squally At 1 PM His Serene Highness y^e Hereditary Prince of Brunswick Embark'd on board y^e Augusta, at w^h time a Flag was hoisted on b^d Her, on a Flagstaff abaft on y^e Starb^d Quarter Saluted Him w^h 7 Guns, as did y^e Fubbs, & Augusta at $\frac{1}{2}$ past y^e Fubbs made y^e Signal to weigh; at 2 Weigh'd & came to Sail in Company w^h y^e Fubbs & Augusta Yatch's & Cruiser Sloops; a 4 y^e Happy Sloop join'd Comp^y at 5 pass'd Orfordness. at 9 brot' to under y^e Mizen. at 7 AM Wore & brot to w^h y^e Mizen, Small Trysail, and Dble Reef'd Foresail.

31 January. Strong Gales and squally wear^r w^h a great Sea: Lying to as before in Company w^h the other Yatchs.

1 February. D^o wear^r Standing to y^e SW^t under y^e mainsail, Dble Reef'd. the other Yatchs in sight.

2 February. Fresh Gales and squally wear^r y^e 1st & Midd^e p^{ts} y^e Latter more Mod^{te}. At 8 am saw y^e land, at 11 a Pilot came on board.

3 February. The 1st part Mod^{te} & fair, y^e middle and Latter parts Strong Gales W^h Hail and Rain. At 2 PM running over y^e Honder at 3 went alongside y^e Pier-Heads at Helvoetsluy, at w^h time the Hereditary Prince of Brunswick Disembarking from y^e Augusta; at $\frac{1}{2}$ past y^e Hereditary Princess Disembark'd from the Fubbs; and was Saluted by that Yatch w^h 7 Guns.

(P.R.O. Adm. 51/497)

Cruiser:

30 January. . . . at 10 Am weighd and came to sail 2^d reefd the topsails, in Company with three of his Maj^{ts} yatchs and happy Sloop. at noon Balrey Clifffes bore NBE 2 Miles.

31 January. First part fresh gales and mid^{le} and latter p^t hard gales and Squalls with rain at 11 Pm cut away the Cutter she being Obliged to be towed on Acc^t of haveing the Prince of Brunswick's Coach on Board at 8 Am brought too at $\frac{1}{2}$ past D^o wore ship at 10 D^o reefd Courses.

1 February. D^o w^r laying to at 2 pm made sail at 8 Set the Courses at 9 D^o the princess Augusta yatch made the Signal of Distress bore Down and spoke with her she haveing sprung her main Mast repeat'd the Signal at 10 the fleet wore and made sail to the Westw^d.

2 February. First & Middle p^{ts} D^o W^r latter mod^t at 5 pm sounded in 18 fathoms at 1 am let reefs out the Courses and set the top Sails at 9 D^o set the top gall^t sails at noon Schawen bor SBW 3 leagues.

3 February. First p^t fresh gales mid^{le} and latter mod^t at 2 pm Goree Church SEBE 2 miles at 4 Came to anchor in Hellevoit Sluys road at 12 pm lowered the Lower yards and top masts at 3 am Moord Ship at 10 Fired two Salutes to the prince and Princess of Brunswick of 7 Guns each.

(P.R.O. Adm. 51/217)

Happy:

30 January. These 24 hours hard Gales & Squalls of Rain, at 1 PM Saluted the Princess & Prince, on their going on board the Yatch, with 15 Guns, at 10 AM Saluted the Princess as the yatch Past us with 11 Guns, at 11 Saluted the Prince as the yatch Past us with 11 Guns More, D^o weigh'd & Made Sail, a Pilot Came on Board for the Coast of Holland at Noon Balsey Clift NNE $\frac{1}{2}$ E 2 Miles, in Company 3 yatchs & the Cruizer Sloop.

31 January. These 24 hours Mod^t and Fair, at 4 PM Orford Church NW $\frac{1}{2}$ W 4 Leag^s at 7 in Comp^y with the 3 yatchs, the Cruizer Sloop and Packet, at 9 lay too Drift EBN, sounded from 23 to 20 f^ms at 12 Goree ESE 16 Leag^s.

1 February. These 24 hours hard Gales and Cloudy, In Comp^y 3 yatchs, the Cruizer & a Packett, att 4 pm the Ship made very bad wear^r ship^d much water, had wash'd overboard a Chest containing the Arm^rs Tools, also 4 Empty Punch^s which were lashed upon Deck, & sev^l other Things, Att 6 Lost Sight of the Yatchs, The Texel p^r Acc^t 14 or 15 Lea^s NEBE, Att 3 AM Ofordness p^r SW $\frac{3}{4}$ W 28 Leagues, Att $\frac{1}{2}$ past 7 Wore Ship. Att Noon Goree p^r Account S $\frac{3}{4}$ E 28 Leagues.

2 February. These 24 hours hard Gales & Cloudy Att 4 PM made sail, Att 8 Orford NEBE $\frac{1}{4}$ E 75 miles, att 10 Sounded in 19 f^m Water: o^t 2^d RF^s Sett Mⁿ S^l & MT Sail, Att 6 AM up TG Y^{ds} & Sett Scudding Sails, A Ship astern made Sig^l of Distress, lay too for her, she prov'd to be the Generous Planter of & for London from St Chris^r Att 9 made the Land, Att 10 saw the 3 Yatchs the Cruizer Sloop & a Packett to the NE of us, Att Noon join'd the Yatchs.

3 February. These 24 Hours Mod^t & fair wea^r Att 1 pm past the 1st Buoy in Goree Gatt, Att 3 Anch^d in Helvoet Road in 5 f^m Water when Moord^d Goree Church NWBW, Att 4 Salu^d the Princess with 9 Guns as she was going on Shore, att 10 Rounded, Worm'd & Parcelld, the B^t B^r Cable, Expended in d^o 100 f^m of old Rope & 10 Yards of Canvas, Att 3 AM, Down TG Y^{ds}, att 11 am Saluted the Princess with 21 Guns as she said past us in a Dutch Yatch for Rotterdam, Lent our Yawl to the Cruizer she having lost both her Boats at Sea.

(P.R.O. Adm. 51/434)

In his report to the Admiralty, dated 2 February, Captain Spry wrote:

We sailed from Harwich on Monday about Noon, the Wind being at W by N with fine clear Weather. In the evening it began to blow very strong at W.S.W. & continued very thick and dirty, with heavy Squalls of Wind & Rain till Wensday Night, when it shifted to the N.W. & became more moderate. I then made the best of my way for the Coast of Holland & luckily Anchor'd here about Three in the afternoon on Thursday, soon after which, another heavy gale came on, & it now blows and rains excessive hard. We are the more fortunate in gaining our port before the second Gale, as the Augusta had sprung her Main Mast on Tuesday Night, & we are all in some measure disabled....

PS the 3rd Febr... Her Royal Highness set out this Morning for the Hague accompany'd by three Yachts which were waiting here to attend her. The Hereditary Prince went by land about an hour before. I must further beg leave to mention that Her Royal Highness was surprizingly cheerful notwithstanding the badness of the Weather, and never once shew'd the least apprehension of danger.

(P.R.O. Adm. 1/2479)

This second gale delayed the return of the squadron so that they did not reach England until 21 February.

THE HERMIONE MUTINY

Contributed by J. D. Spinney

Since I wrote my article on the *Hermione* mutiny (*M.M.*, 1955), some new material has come to light. In November 1839 David O'Brien Casey, one of the three surviving officers, presented a memorandum of his services to Admiral Sir William Hyde Parker, and in it were his recollections of the famous mutiny. The manuscript, together with Casey's Naval General Service medal, has recently found its way to Greenwich, and I am obliged to the authorities there for drawing my attention to it. Casey's account, written so many years later, may well suffer from his own imperfect recollection: indeed, he admits as much. But as it may be of interest to members I have extracted from the memorandum the whole passage relating to his services under Captain Pigot, and set it down verbatim.

...On my joining the *Hermione* as above stated, I was received by Captain Pigot, and all the officers in the kindest manner, all seemed to commiserate my late misfortune, even my old Shipmates, among the Crew, partook of the same feelings—Captain Pigot continued to approve of my conduct and to treat me with mark'd attention and kindness till about a week before that dreadful and never to be forgotten Mutiny, a period of Seven or Eight Months, during which time we were most *actively employed*, and *more than once plac'd in very trying situations*, on the Coast of St Domingo, Porto Rico and the Spanish Main; frequently severely engaged in cutting out & harassing the Enemy, with the Ship, and sometimes with the Boats; on some of these occasions, and for my general attention and exertions, he was often pleased to compliment me, particularly on Cutting some Vessels out of a Western Port in Porto Rico & some attempts in some Ports in St Domingo—He also more than once, recommended me strongly to Admiral Sir Hyde Parker, who promised as soon as my years probation expired, he would promote me to my former rank as Lieutenant.

While cruising on the Spanish Main with the *Ceres*, Commanded by the present Admiral Otway, we struck on a Shoal, but got off almost immediately, the *Ceres* was less fortunate; She was very near being lost, and but for the *Hermione*'s exertions, would have been completely so; as it was, She lost her Guns and Stores, and I believe her Main & Mizen Masts, Cut away—Forbes (Masters Mate) and myself with a party of Men, were employed on board the *Ceres*, the entire time, and we received Captain Otway's public thanks, in a letter to Captain Pigot, which he requested might be publicly read, which was accordingly done, on the *Hermione*'s quarter Deck—Perhaps Admiral Otway will recollect, though so many years back, the *Ceres* having a great quantity of Water lodged forward in consequence of a leak, and the limbers being Choked, and while undecided how to free her, my suggesting, and strongly recommending (having been in a similar situation before) one or two of the hand Pumps being removed forward, which was instantly done, with the desired effect—As well as I can recollect, the *Ceres* was very badly officer'd and indifferently Mann'd.

Harris our first Lieutenant, had the Watch when the Ships got on shore, he was tried by a Court Martial by Captain Pigot, on our Arrival at Cape St Nichola Mole, and acquitted of all charges, and immediately quitted the *Hermione*, & join'd his friend Admiral Bligh's ship; I believe they were related in some way.

In the month of September 1797, about a Week previous to the Unfortunate Mutiny, when reefing Topsails at our usual hour in the Evening, I was at my Station in the Main Top when Captain Pigot, who appear'd to be greatly excited, fancying I suppose that we were not as smart as usual (we were known and admitted to be a very smart ship) got into a violent passion, at which

moment he observed a Man going up the lee Main Top Mast rigging, and instantly in very harsh language, desired to know the Cause—I answer'd in the most respectful Manner, that a point remain'd untied, and a Gasket hung abaft the Yard;—He instantly launch'd out in the most abusive and unofficer like language, calling me a damn'd lubber, a worthless good for nothing fellow, that I never did anything right, & used many other severe expressions, that I cannot and do not wish to recollect, and which may as well perhaps be omitted, to all which I made no reply;—But on my descending from the Main rigging to the Quarter Deck, he again attack'd me in similar language as before, when my feelings were so excited from his dreadful and unmerited abuse, I replied that I was no such Character as he described, of which he and every officer in the Ship was well convinc'd. ‘Silence, Sir, or I will instantly tie you up to the Gun and flog you’—‘I hope not Sir, this is Cruel treatment Captain Pigot, and what I don't deserve’ was my reply—I was then ordered below under Arrest. About Seven or Eight O'Clock that same Evening, I was ordered to appear before the Captain in his Cabin, where I found the first Lieut., Master, and Purser, with the Captain assembled before me—Immediately on my appearance Captn. Pigot addressed me nearly as follows—viz.—

‘Mr Casey, I have sent for you before these officers to express my disapprobation of your conduct this Evening, and to know from them if they observed it, they seem ignorant, otherwise I would try you by a Court Martial, I have also question'd them as to your Character, & they give you the highest character possible; and I must say myself that your conduct since with me, has given me the greatest satisfaction.’—He then went on expressing his sorrow for my misfortunes, that he pitied me, and treated me more like one of his Lieutenants, than a Midshipman, but from that moment he would change his conduct, and consider me the same as any other Midshipman in the Ship, with the exception that I should never Dine at his Table, and if I did not go down on my Knees the following Morning publicly on the Quarter Deck, he would flog me most severely, and in the most degrading way possible—I endeavour'd to express my sincere sorrow, and I commen'd in the most respectful and submissive manner to make every possible atonement for any—real or imagin'd offence; I also endeavour'd to express my gratitude for all his kind conduct to me while with him;—But all was unavailing, I should and must submit to his decision of going on my Knees the following day—I was then order'd from his Cabin and to arrest in my Birth, as before—All this occurred in the presence of the before mention'd three Officers, one of whom, the Master, now retired Commander Southcott, is still living.

Between Nine and ten O'Clock the same Night, Reid, the Senior Lieutenant and Officer of the first Watch (all were Acting Lieutenants) sent for me on Deck from my Bed, and endeavour'd by every persuasive argument, as a previous Messmate and friend, to prevail upon me to submit to Captain Pigots desire, in order to prevent the disgrace of flogging, which in the event of my refusal would be the result; I indignantly refused, adding that I thought he knew me better;—the poor fellow seem'd greatly distressed at his failure, and at what I believe he consider'd my obstinacy, he well knew what would follow, and he was most anxious to prevent it. I discover'd after that he had been instructed by the Captain to speak to me as he had done; Some of the other Officers spoke to me early the following morning on the same subject, and endeavour'd to change my resolution, they were all more or less, apparently attach'd to me, and anxious to prevent my disgraceful punishment, but none would attempt to persuade the Captain to change his Cruel intention, they all appear'd to be greatly in dread of him; poor Reid came with him from the Success, and on Harris quitting, he became first Lieutenant, which was rather unfortunate, he being for many reasons, very unfit for the situation, particularly with such a person as Captain Pigot.

On the following morning after my being placed under arrest, about Eleven O'Clock, the usual hour of punishment, I was brought on the Quarter Deck, before the whole Ships Company, the Officers and Marines, under Arms; the Articles of War were read;—then the Captain address'd me and said that for my contemptuous and disrespectful Conduct the previous Evening, he insisted on my going on my knees, and begging his pardon—I assured him in the most solemn, humble, and respectful manner, that I had no intention of offering him the slightest insult, I was very sorry he should think so, and I begged his pardon;—But nothing less than going on my knees would

satisfy, which he repeatedly insisted on my doing, and on my refusing to submit to such degradation, adding that he himself would be the first to despise me for doing so, and that I could never continue in the Service; He then with an Oath, or rather Coarse Curse, order'd me to strip, which I also declin'd, saying that I never stripp'd at a public place of punishment, he might order whom he pleased to strip me, and I would not prevent them. The Master at Arms, and Sergeant of Marines, then perform'd that unpleasant duty, and I was seized to the Capstern, the usual place of punishment, and I received one dozen lashes from the Boatswain on my back—I was then order'd to quit the Midshipmans Mess, and to do no more duty, but to prepare to quit the Ship the *first* opportunity, with a positive assurance from the Captain that such should take place as soon as possible.

All the Officers as well as my unfortunate Messmates, Commiserated with me most feelingly, and all continued to treat me with great kindness and attention—I quitted the Midshipmans Mess from the moment of my punishment, and Mess'd on my Chest in the Steerage, near their Birth; My Meals were regularly supplied from the Gunroom, or my late Mess, and some of the officers, as well as my late Messmates, visited me occasionally, and sat and chatted with me by *stealth*. I have reason to know from the best authority that Captain Pigot frequently after my punishment, expressed his regret to some of the Gunroom Officers, in very strong terms, and he was often heard to say that no Circumstance of his life gave him more real pain, than his very severe Conduct to me, for he ever consider'd me much superior to any other Midshipman in the Ship, and indeed to do him justice, he gave me very strong proofs of his good opinion, until this late unfortunate circumstance.

A few days after my punishment a melancholy circumstance occurred in reefing Topsails, which greatly increased the previous dislike of the Captain, and no doubt, hasten'd, if not entirely decided, the Mutiny; three Boys fell from the Mizen Topsail Yard on the Quarter Deck, and were kill'd—the melancholy accident caused a painful sensation where it was observed, and a momentary relaxation in the duties aloft, particularly in the Main Top, to which place two Boatswains Mates were instantly sent, to start the entire Topmen, which was accordingly and indiscriminately done, and on the following morning a *very severe punishment* of several Men, I believe twelve or fourteen, took place in the usual way, at the public place of punishment—That evening, or the following, I am not certain which, but on the 21st of September 1797, the Mutiny took place—It commenced about Eleven O'Clock at Night, in three separate parties, against the Quarter Deck, Captain's Cabin, and Gunroom, with a wild, undescribable noise, and shouting; No resistance being made in any quarter, the Ship was instantly in possession of the Mutineers, when the Captain, Second and third Lieutenants and one Midshipman were at once Murder'd, in the most savage and Cruel Manner. The party that attack'd the Cabin, knock'd down the Sentinel at the Door, and attack'd the Captain as he jumped out of his Bed, all taking a Cut or Stab at him, according to the Weapons they were arm'd with (which were various) accompanied with horrible language, & reminding him of his own severity, and Cruelty; they then left him in a dying state, and join'd those on the Quarter Deck, when they insisted on the third Lieutenant's being put to Death; he was at once Cut, and Stabbd, and thrown overboard (he was officer of the Watch, and a humane good young man, and was spared by the first party) this same Cabin party, finding their assistance and presence on the Quarter Deck unnecessary, return'd to the Captain, put him to death, and threw him out of his Cabin Window—The Gun-room party put the Second Lieutenant and Midshipman to Death in the most savage manner, and as they dragg'd them up the Hatchway, apparently Dead, they continued Cutting and Stabbing them with various Weapons, till they reach'd the Main Deck, when they threw them overboard; the conduct of some of the Crew was truly savage, and brutal, and cannot be described. It was then warmly debated how the remaining officers should be disposed of, and there appear'd every hope of their lives being spar'd, till a great part of the Crew (many of whom were not concern'd in the Commencement, but now much worse than the Original Mutineers) got access to the Spirit room, and got drunk; not more than three hours had then elaps'd from the first massacre, when there was a general cry to put every officer young and old, to Death—The scene now became dreadful, and the greatest confusion prevailed, all were more or less, inflam'd, and excited by Spirits, except

about 40 or 50 of the principal Mutineers, who kept Sober and Steady, and opposed to taking any more lives; but the majority of the Crew prevailed against them, and the remaining unfortunate officers were brought on Deck, and disposed of as their fate was decided; some were wounded and thrown overboard, and others thrown over unhurt;—the language, noise, and scene altogether, was horrible, as may be easily imagined—My life was repeatedly debated, and for some hours in the scales—I was subsequently told by my friends, that I was twice or thrice Condemn'd, and on the point of suffering, and that it was with the greatest difficulty I was saved; two or three of them always kept near me during the Night, as a protecting guard and removed me Occasionally from place to place; for more certain safety. The Master was principally sav'd by two of the principal Mutineers placing themselves as Sentinels at his Cabin Door, and by his Servant Boy (quite a youth, and who died in Prison) going through the Ship crying, and begging of the Crew, most piteously, that his Masters life might be spared—He was confined to his Bed in Consequence of one of the Boys that was kill'd striking him on the back in his fall from the Mizen Topsail Yard. The Gunner, and Carpenter, who had not been very long promoted, were also saved; the latter had been some years in the Ship, as Carpenters Mate, etc.—Turner (Masters Mate, a clever and disappointed Man) one Midshipman, and Surgeons Mate, join'd in the Mutiny; the latter was a treacherous, drunken infamous character, he was in many instances worse than the worst of the Mutineers—Those who suffer'd were the Captain, three Lieutenants, Lieut., Marines, Surgeon, Purser, one Midshipman, Boatswain & Captains Clerk, ten in all—It was then decided to run for La Guira, on the Spanish Main, where we arrived on the 27th following—The Ship was in the greatest possible Confusion during the passage, many of the Crew continually in a state of drunkenness, and frequently fighting; those officers saved, as well as myself, were consequently in continual dread of being put to Death; on one or two occasions, our *death* appear'd almost certain, and but for the steady good Conduct of some of the principal Mutineers, we must have suffer'd.

On our Arrival off La Guira, Turner, with some of the best inform'd, and leading Mutineers, went with a Flag of Truce, and made terms for giving up the Ship and Crew (besides being received and treated as Spanish Subjects, they got a large Sum of Money) We anchor'd the following day the 28th, in La Guira roads, and in three or four days after we landed—Great efforts were made to induce me to join the Mutineers, and become a Spanish Subject; but I insisted on being landed and received as a prisoner of War—Turner, & many of the Mutineers expressed great surprise at my returning to England after the treatment I received; My Answer to which was, that, that treatment alone, would determine my return, to convince my friends, and the Naval Service generally, that I was innocent of the Mutiny, I fairly anticipated what the general feeling would be about me—The Master, Gunner, Carpenter, & Ships Cook (a respectable old man) followed my example, or at least accompanied me; the Captain Steward, & two or three Marines, did the same in a day or two after—We were all Confined together in a very large Barrack Room, without distinction of rank, or persons; But on repeated remonstrances, our Condition was improved.

While at anchor at La Guira, a day or two previous to our landing, I was suspected, and reported by one of the principal Mutineers, to be conspiring and planning to Cut the Ship out of the Roads, on which I underwent a form of trial, and though there was some truth in the Charge, nothing could be proved; still various summary punishments was recommended by some, and immediate Death by a few, for infamous treachery, and ingratitude. But my friends, who were strong, in the absence of proof, *over ruled* them, and I was, as they term'd it, honorably acquitted, and the charges pronounced false, and unfounded—Strange to say, during this trial, I abused my accuser, calling him a Coward, and a worthless scoundrel, tho' a Fore Castle Man, and on his reminding me of having him once flogged, I told him before the entire Court, that he richly deserved it, and that I would do the same again, if placed in a similar situation. I have often since wonder'd that I was not cut to pieces, for I was stiff and impudent, and sometimes severe to some of the Mutineers; in fact in those days I was a stranger to fear, and perhaps in some instances regardless of life;—In this instance I am indebted to my previous misfortunes, and some attach'd friends, for the preservation of my life.

We continued Prisoners at La Guira, & Carracas (mostly Closely Confined) for about six

months, when we were sent in a Cartel to Martinique, previously exacting a solemn promise from us, that we would not serve against the Spanish Government till regularly exchanged, which promise I faithfully observed. On our arrival at Martinique, we were received on board the *Prince of Wales*, Admiral Harvey, soon after our arrival, two of the *Hermione's* Crew was taken; they were both tried by a Court Martial, one was found guilty and executed, the other was acquitted—In about a month after our reception in the *Prince of Wales*, we were sent to England in the *Alfred*, with a large Convoy, and in a reasonable time after our Arrival, we were regularly tried by a Court Martial, at Sheerness, and all acquitted....

NOTES

THE BOUNTY'S ANCHOR

In a letter of 14 August 1957 from Sandakan, North Borneo, Mr Parker informs me that the anchor had straight arms. He writes: 'It is known, I understand, that no ship of any size has anchored in Bounty Bay since 1856.' The anchor was not far from the shore: 'the shank was aimed right for the place where other remains indicate the *Bounty* was burned. Presumably it was put out as a stern anchor.'

Inadvertently in his previous letter 'diameter' was put for 'circumference', except for the diameter of the ring of the anchor.

From what is now known it is pretty evident that the anchor was one of the *Bounty's*.

A. MOORE

ROBERT SHEDDEN AND THE *NANCY DAWSON*

When Captain Henry Kellett, R.N., commander of the search for Sir John Franklin's expedition by way of Bering Strait in H.M.S. *Herald*, arrived in July 1849 at Awachta Bay near Petropavlovsk, he was surprised to find a vessel wearing the burgee of the Royal Thames Yacht Club. It was the *Nancy Dawson*, owned and commanded by Robert Shedden, who wished to volunteer for the search although he was in the last stages of consumption.¹

Shedden was a well-to-do man who lived at Southsea. He had been a Mate in the Royal Navy. He had served throughout the Chinese war and had been severely wounded. His last ship had been the *Victory*. In 1841 he was master of the *James Lyon*, a brigantine of 137 tons in the Liverpool-Honduras trade. A few years later he bought the *Nancy Dawson*, a schooner of 163 tons (108 tons o.m.)—which had been built in 1847 by Messrs Camper of Gosport. In this vessel he was employed in the coasting trade.²

He was born about 1819, the son of William Shedden of Wimpole Street, who was a partner in the firm of Messrs Hawthorn and Shedden, West India merchants of 5 Lime Street Square, London. William Shedden had served in the Navy during the Napoleonic Wars as a midshipman. Although recommended for promotion, he had returned to the merchant service after the war. The Captain of the *Hamadryad* reported on him in 1814:

'Has served under my command for more than two years, his conduct has been attentive and proper, but he does not appear attached to the Service.'

¹ D. Murray Smith, *Arctic Explorations* (London, 1877), p. 422. Sir John Richardson, *Arctic Searching Expedition* (London, 1851), Vol. II, p. 150.

² *The Times*, 11 January 1850. *Journal of the Royal Geographical Society*, 1851, p. 34. *Lloyd's Register*, 1841, 1847.

In 1829 William Shedden's name appeared in a list of subscribers to support Henry Bell in the last years of his life; he gave a guinea. In 1831 William Shedden was in the Riga trade as master of the *John*.¹

There seems to have been an earlier generation of the family connected with the sea. In 1783 in the *Five Brothers*, Shedden was trading from Newhaven to Bristol. In 1794 in the *Pan*, Shedden on a voyage from Bristol to St Vincent was captured by a French frigate and taken into Brest. And in 1820 there was the firm of Robert Shedden and Sons, Merchants, in Charlotte Street, Bedford Square.²

The *Nancy Dawson* was also engaged in foreign trade. In 1848 she was employed between England and Bombay. Robert Shedden was interested in wider things than trading. In the 1840's he became a Fellow of the Royal Geographical Society by compounding.

Shedden probably sailed from England at the end of 1848 when the first searches for Franklin were under way. His schooner was well stocked with provisions, stores and instruments. The crew, a most disorganized set of men, largely American, were entered at Hong Kong: there were too many of them for a small ship. He touched at the Loo Choo Islands on his way to Siberia.³

Shedden offered to place his vessel at the disposal of Captain Kellett, and was anxious to have a naval officer on board—probably because of disciplinary troubles. Nevertheless, he was still in independent command when he sailed from Awachta Bay in company with the *Herald* on 27 June 1849. The *Nancy Dawson* parted company with H.M.S. *Herald* on 26 July in lat. $71^{\circ} 25' N.$, long. $159^{\circ} 24' W.$

A copy of the log for the next month gives the bare outline of the short Arctic voyage. It was on 28 July, in lat. $71^{\circ} 44' N.$, long. $156^{\circ} 38' W.$, that Shedden met the ice, when he was sailing east-north-east about twenty miles off the coast. On 29 July he sighted H.M.S. *Plover*, discovery ship (also engaged in the Franklin search), and communicated with Commander T. E. L. Moore. On 1 August he sighted the *Plover*'s four boats commanded by Lieutenant W. J. L. Pullen (which had left the ship on 25 July off Wainwright Inlet), and followed them up to Point Barrow. For the next few days he remained beset in the neighbourhood of Point Barrow. The *Nancy Dawson* ran aground on a shoal, but got off. Shedden passed Cape Smyth on 7 August, and on the 11th landed a party at Refuge Inlet to erect a post and bury provisions. On the previous day Shedden, Mr Dunn (his chief officer), and Pullen had gone ashore in the *Nancy Dawson*'s gig to see if there was another inlet farther on.⁴

The crew began to cause trouble on 12 August. They were ordered to hoist the launch in and refused to do so. Some of the men told Shedden that they would 'do for him' if the vessel had to winter. He read the ship's articles to them and called on Mr Henry Martin, Second Master of the *Plover*, who put three men in irons. There were further refusals to obey orders. The *Nancy Dawson* was then off Sea Horse Island. Shedden could see that little could be achieved with a small schooner with a mutinous crew while he was ill, and he therefore continued southward. He passed Point Belcher on the 14th, Icy Cape on the 16th, Cape Lisburne on the 18th and Cape Thompson on the 19th.

On 24 August the *Nancy Dawson* sighted the *Herald* coming from the north where she had reached latitude $72^{\circ} N.$ On the following day Captain Kellett read the ship's articles to the crew of the *Nancy Dawson* and spoke to them. He took three men, William Ashmore, C. Hawkins and P. Giles—probably those who had been put in irons—out of the schooner. He ordered the Second Master of the *Herald*, Mr W. F. Parsons, to take charge of the *Nancy Dawson* and take

¹ Public Record Office, Ad. 7/189, *Arctic Expeditions*, 1849–50, folio 9. W. Kelly and Co., *Post Office Directory of London*, 1846. P.R.O., Ad. 6/178, *Masters, Mates... Candidates for Promotion*. *Glasgow Chronicle*, 14 January 1829. *Courier*, 26 September 1831.

² *Bristol Journal*, 26 April 1783, 17 May 1794. *Robinson's Improved London Directory* for 1820.

³ *Lloyd's List*, 1 February 1848. *J.R.G.S.*, 1849. D. M. Smith, p. 422. Ad. 7/189, folio 3.

⁴ D. M. Smith, p. 422. Ad. 7/189, folio 6. *The Times*, 25 January 1850. W. H. Hooper, *Ten Months in the Tents of the Tuski* (London, 1853), pp. 221, 229.

her to Matlazan to await the *Herald*. The Schooner reached Point Hope on 26 August and came into Kotzebue Sound two days later. Captain Shedd died at Matlazan.¹ The date of his death cannot be given as it was not recorded by the Registrar General. He was buried in the Protestant cemetery.

All who knew Mr Shedd spoke well of him. Captain Moore told Captain Kellett of 'his kindness and attention on all occasions to the boats of the expedition'. Lieutenant Pullen told Captain Kellett that 'his kindness to us has been unbounded, assisting us in every way'. Lieutenant Hooper described him as 'a noble hearted man'. John Brown (who was seldom given to charitable comment) said that he was 'much esteemed and sincerely lamented', adding that he was the first man to sail round the world in a yacht.

A point on the south side of Refuge Inlet (in lat. $71^{\circ} 9'$ N., long. $156^{\circ} 50'$ W.) was named after Shedd. The *Nancy Dawson* was afterwards engaged in the trade from London to St Michael.²

It was a conversation that one of his officers had with the British Consul at Matlazan that gave rise to the rumour (which was published in the *Public Good* of San Francisco on 29 December 1851 and afterwards in the *Liverpool Mercury*) that Franklin's ships had been discovered in Prince Regent Inlet.

In 1851 a tablet was erected to the memory of Robert Shedd in the Church of Weston Underwood in Buckinghamshire. It is no longer to be seen, but it read, 'To the memory of Robert Shedd who built and fitted out the Royal Thames Club schooner-yacht the *Nancy Dawson* and in his frail barque he bravely explored the Frozen Ocean in the Arctic Regions in the disinterested search after the long-missing Sir John Franklin and his gallant band in vain.'³

A. J. S. JONES

THE 'MAHONA' IN BRUEGEL'S PRINTS

It gave me great satisfaction to notice that, of the four conditions which, in my opinion, the 'mahona' of Bruegel's time ought to fulfil, two (the second and third) were admitted without opposition by Dr Anderson (*M.M.* Aug. 1957, p. 245).

As for the first condition—hull resembling that of a galeass—I am convinced that his reluctance to accept my view is due principally to the fact that he cannot imagine the 'mahona' but as an oared vessel. He even questions the exactness of Pantera's printed text and suggests an emendation which almost completely reverses its meaning.

This interpretation does not seem conclusive and I confess that I prefer holding to Pantera's text as it is; it allows an acceptable solution of what otherwise would still remain a double riddle, viz. (a) what type of ship is Bruegel's 'monster'; (b) what was a 'mahona' like in that painter's time?

Dr Anderson expresses the belief that the 'monster' may be an English or northern French 'galeass', and asks whether Bruegel was justified in including ships of this type in a picture of a battle in the Mediterranean, supposing that such a battle actually took place.

Chroniclers do not refer to a sea battle in the Straits of Messina or even in the Mediterranean about the middle of the sixteenth century. We may suppose that there happened only an unimportant affray between Christians and Turks; in fact, Bruegel's picture does not show a more spectacular event.

Sandoval relates the incursions of the Moslems in the Western Mediterranean and mentions the presence of 'mahonas' in their fleet. The aspect of the two queerly shaped square-riggers near the lower edge of the print fits well Pantera's description of the 'mahona'. Bruegel found on the

¹ Ad. 7/189, ff. 6, 3. *The Times*, 25 January 1850. *Navy List*, 20 December 1848. John Brown, *The North West Passage* (London, 1858) p. 147n. *Edinburgh Courant*, 30 September 1851.

² *The Times*, 25 January 1850. Hopper, p. 213. Brown, p. 147n. *Lloyd's Register*, 1856.

³ *Galloway Advertiser*, 15 March 1850. *Edinburgh Courant*, 30 September 1851. Admiralty Chart L 107101 at the Hydrographic Office shows the course of the *Nancy Dawson* in manuscript.

spot, during his stay in Italy, what he wanted, and he needed not to borrow the features of English or French ships to picture an incident which was totally strange to these.

Finally, I regret that even on the question of the three ships with cockbilled yards, I cannot agree with Dr Anderson to look at them as three views of the same ship. It certainly is only a small point, but it seems to me that it is, nevertheless, interesting to consider how, for instance, the position of the wales may differ from one ship to another.

O. BUYSSENS

The *Encyclopedia Universal Ilustrada*, Espase-Calpe, Madrid, states Mahona is derived from the Turkish *mawunah*, a transport type of vessel which was, according to Pantero Pantera, similar to the Galeass of Venice but using only sail, although at the beginning of the sixteenth century they also appeared to use oars. These vessels carried square sails similar to those of Naos. Mahonas were used by the Turks as naval transports, no mention being made of their employment as commercial carriers. They disappeared at the end of the seventeenth century.

EDGAR K. THOMPSON

THE 'SYMONDITES'

(See *M.M.* Vol. 43, p. 337)

Mr Carr Laughton's Note of November 1957 concerned the reported unpleasant liveliness of this type of vessel in a seaway. Their peg-top hull section combined with some lack of ballast surely indicates, as he states, that they relied more on their form for stability than upon ballast. Such vessels behave rather like rafts which follow the slopes of passing waves, whereas a deeper vessel would be more akin to a floating pendulum and tend only to heave up and down.

The peg-top form will not only roll and heave with the bodily motion of the waves, but also, because in rolling it tends 'to put in larger wedges than it takes out', the vessel rises at the end of the roll, particularly at the end of the lee roll, being the larger. This complicates the motion and may be sufficiently pronounced as to aggravate its effects: it could be the cause of 'the kick' at the end of the lee roll. At such angles the vessel will be quite safe, though uncomfortable.

In his designs, Symonds's object was presumably to obtain speed by reducing displacement. To do this he dispensed with as much ballast as possible, which involved him in a rise in the vessel's centre of gravity. To preserve stability it was necessary to raise the metacentre by like amount, by adopting the beamy peg-top form.

The more top weight carried (i.e. the higher the centre of gravity) the more beam a vessel would need to maintain stability, and in turn the more free-board she would require to preserve it to a safe angle of heel. In general, however, large vessels had smaller beam to length and to draught ratios than small vessels, so they would have been less naturally adaptable to the needs of Symonds's concept. Without the necessary stability calculations a large Symondite would be less likely to be adequately stable than a smaller one.

It is possible that some Symondites, in order to carry an excessive deck armament, had too little free-board relative to their beam. In such cases the deck edge is immersed and the rate of increase of righting moment starts to diminish at too small an angle, so that the ship is more easily capsized. This danger was not generally realized until after the loss of H.M.S. *Captain*. Symondites would tend to be sensitive to recklessly increased deck loads, particularly when elderly and suffering from diminished free-board by soakage and weight growth generally.

J. F. COATES

The objection to the large Symondites was explained in *The History of the American Sailing Navy*, pages 405-7, 448-50. I found Samuel Pook had stated the case against the large Symondites. First, the high and soft bilge produces an easy, but deep rolling vessel. If great beam is employed, the immersed wedge usually increases sharply at the extreme of the roll and this gives the jerk complained of in the large Symondites. For fast-sailing hulls Symonds's ideas were probably sound, particularly for small vessels. His vessels had ballast, of course, but he attempted to reduce the amount of relative ballast and displacement, yet retain power to carry sail by use of marked beam increase. This was correct to increase speed but incorrect for a gun platform.

HOWARD I. CHAPELLE

SPEED UNDER SAIL

(See *M.M.*, Vol 43, pp. 225-231, 341-2)

David R. MacGregor suggests that study of the log books might cast further light on the problem of claims of runs greater than 400 miles in a day. I have looked at the two in the National Archives in Washington that he mentions as cited by Cutler, and I hope that someone can search those at Harrow.

The *Sovereign of the Seas*'s log for 1853 is in Vol. 115 of the Archives collection. It is not the same log as that quoted from by Maury in his *Explanations and Sailing Directions*,¹ which I believe is the source of the page reproduced by Cutler;² unfortunately, I was unable to locate the latter. The log in Vol. 115 is merely an abstract; it includes the following information for the period 16-20 March 1853.

Date	Lat. at noon	Long. at noon	Distance (nautical miles)
16	49° 41' S.	109° 34' W.	355
17	D.R. 50° 22' S.	D.R. 101° 22' W.	319
18	D.R. 52° 12' S.	D.R. 92° 47' W.	341
19	55° 18' S.	84° 03' W.	362
20	D.R. 56° 18' S.	D.R. 76° 58' W.	247

'D.R.' of course stands for dead reckoning, the logical inference being that the other positions are from astronomical fixes. The distance column gives the computed rhumb-line distance to the noon position from that of the preceding noon, in nautical miles.

The corresponding data as printed by Maury were

Date	Lat. at noon, S.	Long. at noon, W.	Distance per log	Winds
16	49° 40'	109° 28'	396	N.W.; strong breezes and cloudy, with rain
17	50° 25'	101° 58'	311	N.W.; strong breezes and heavy sea
18	52° 12'	91° 28'	411	N.W.; strong breezes and rough sea
19	58° 18'	84° 03'	360	N.W.; W; W.; strong westerly winds and heavy sea
20	56° 18'	76° 58'	267	W.N.W.; strong breezes and pleasant

My reasons for believing that the page for 18 March reproduced by Cutler is from the same source are: (a) the wind information is identical (Cutler's page has the additional information 'at 10 A.M. took in royals'); (b) the 24-hourly log entries on Cutler's page add up to 411 miles as given by Maury; (c) Cutler's page has 91° 28' entered in the 'Long. per Chr.' column. It seems evident that the Cutler-Maury journal was kept by someone with more time to work up sights than the keeper of the Archives abstract. Cutler's page also contains all the computations involved in working up a time-sight taken at 3 p.m., which yielded 90° 16' W. for the longitude then, and, working back at the speed of 15 knots, 91° 28' W. as the longitude at noon.

Since the Archives log has a D.R. longitude for noon of the 17th that differs from that in the Cutler-Maury journal, it seems a logical assumption that the Cutler-Maury noon longitude of 101° 58' on the 17th was also based on a celestial observation. Taking the positions as given

¹ 8th ed., Washington, D.C., 1859; Vol. 2, pp. 804-5.

² *Greyhounds of the Sea* (New York and London, 1930), opposite p. 252.

therein, and computing by mid-latitude sailing to the nearest whole degree, I obtain the following days' runs for the *Sovereign of the Seas*:

Date	Lat. S.	Long. W.	Distance (nautical miles)	Course
16	49° 40'	109° 28'	368	099°
17	50° 25'	101° 58'	293	105°
18	52° 12'	91° 28'	410	125°
19	55° 18'	84° 03'	320	104°
20	56° 18'	76° 58'	245	091°

The other Archives log is of the *James Baines*, Captain McDonnell, for the run from Liverpool to Melbourne in the spring of 1856; Vol. 204. Most American meteorological logs of this period give the wind only three times a day, with a qualitative description of its strength, but this one has wind entries four times a day and Beaufort forces. Following is a summary of the navigational and wind data for the period 24-31 May 1856:

Date	Lat. S.	Long. W.	Dist. (naut. miles)	Calc. dist. (181)	Winds							
					S.E. x S.	8	S.S.E.	10	S.	11	S.S.W.	10
24	D.R. 38-22° 10'	D.R. 3-14° 00'	225	(181)								
			Long. E.									
25	Obs. 37-40° 17'	Obs. 3-26° 15'	328	(318)	S.S.W.	10	S.S.W.	9	S.W. x S.	9	S.W.	10
26	38-37° 50'	10-00° 22'	320	(316)	S.W.	9	S.W.	8	W.S.W.	7	W.S.W.	6
27	Obs. 40-2° 9'	Obs. 17-40° 45'	384	(367)	W.S.W.	6	W.S.W.	7	S.W.	10	S.W.	10
28	42-44° 19'	25-47° 45'	404	(403)	W.S.W.	—	W.S.W.	10	W.S.W.	9	W. x S.	7
29	D.R. 44-15° 19'	D.R. 30-51° 00'	240	(240)	W.	7	W. x N.	5	W. x N.	3	W.	2
30	Obs. 46-15° 30'	Obs. 36-57° 00'	300	(285)	W.N.W.	3	W.	4	W.S.W.	5	W.S.W.	7
31	Obs. 43-51° 28'	Obs. 43-54° 10'	300	(287)	W.N.W.	8	W.N.W.	6	W.S.W.	3	S.S.W.	6

It is evident that this is the same log as that printed by Maury¹ and also by Lubbock²; however, as it gives more details than either of the other versions, I have quoted it at length. There is still uncertainty as to whether the noon positions for the 26th and 28th are dead reckoning or observed, but a clue can be derived by comparing the record distances with those in parentheses, which I have computed from the noon positions. Except for the 24th, where the log shows a course change, runs to a D.R. position agree with the distance column, runs to an observed position do not. Therefore, the distance column in the log is the sum of 24-hourly log readings, and the D.R. positions have been computed by applying the course and this distance to the previous noon position.

Since the computed runs for the 26th and 28th agree substantially with the log distance, the conclusion to be drawn is that the noon positions for the 26th and 28th are D.R. positions, in the lack of any evidence to the contrary; and hence that the 403-mile run to noon of the 28th is based solely on dead reckoning. However, the log provides incontrovertible evidence that from the observed noon position on the 25th to the same on the 30th, the *James Baines* ran 1611 miles, while her chip log indicated a total of 1648 miles. This 2½% overestimate of the distance is a normal and proper one—dead reckoning should always be ahead of the ship—and it puts Captain Learmont's unkind remarks about the 'Yankee Log' in their proper perspective.

If we take 2½% or 10 miles off the 404 miles logged up to noon of the 28th, we arrive at a corrected distance of 394 miles, which, in view of the logged wind conditions for this week, appears to me to be entirely reasonable.

¹ *Op. cit.* p. 644

² *Colonial Clippers* (Glasgow, 1924), p. 109.

The extracts by Maury do not mention the sail carried, and as it may be of interest to have a record of the sail carried by a wooden ship in the Roaring Forties, I quote the entries in the Archives abstract log for three days:

May 26. P.M. begins with strong gales and heavy sea running; squalls and showers of rain, with gloomy weather. Midnight gale decreasing, reefs out of courses and set stg. sails. 4 A.M. still moderating, out all reefs. Set Royals and Skysail. 8 A.M. set all starboard stun sails. Noon gentle breezes and fine clear weather.

May 27. First gentle breezes and fine clear weather, all sail set. Midnight ditto wind and weather. A.M. breeze freshening and heavy black clouds driving up from the S.W. Noon ditto wind and weather.

May 28. P.M. begins with brisk gales and occasional heavy squalls, accompanied with heavy rain; at 4 P.M. handed small sails and double reefed Fore & Mizen Courses. Midnight still increasing. Noon ditto ditto.

One other good day's run is recorded in the *James Baines*'s homeward bound from Melbourne. Here are the pertinent log entries

Aug.	Lat. S.	Long. W.	Dis-	Winds										
				27	Obs. 55-36° 43' Obs. 153-00° 00'	280	N.W.	2	N.W.	3	N.N.W.	5	N.N.W.	5
					... 8 P.M. breeze increasing with light rain.		Set sky sail studding sail and sky stay sails...							
28	Obs. 56-52° 35'	Obs. 143-00° 00'	356				N.N.W.	6	N.N.W.	7	N.N.W.	7	N.W.	6
					... 8 P.M. in all studding sails. Midnight...	handed sky sail and Royals.	6 A.M. set all plain sail and port studding sails....							
29	D.R. 57-13° 00'	D.R. 136-37° 00'	220	N.		3	N.×E.	2	N.N.E.	2	N.N.E.	5		
					... midnight took in all studding sails and braced up sharp upon the port tack....									

This run is stated to be between two observed positions, which I compute to yield a day's run of 345 miles, course 103° true. (Incidentally, a note in the log states that variation has been allowed for in entering the wind directions.) The wind entries in the two extracts from the *James Baines*'s abstract log give the answer to the often-asked question: Why were all the claims for great days' runs based on a single day's work? The implication is that wind conditions in the Roaring Forties are much like those in the Trades, and that favourable winds should continue for days at a time.

Captain McDonnell's careful entries, which can readily be confirmed by a glance at the wind roses on a southern hemisphere pilot chart, give an entirely different picture of the wind conditions. Instead of a steady westerly wind of force 6 (which is about the *average* condition), there is a series of depressions travelling from west to east, the wind directions ranging all the way from N.N.E. to S.E.×S. with forces from 2 to 11. Whenever the *James Baines* had a force 7 wind between 3 and 5 points from abeam, these logs show, she could average better than 14 knots under skysail and studding sails, and on the one day when she had more wind than this (27 May) she averaged 16½ knots.

One ingenious explanation that is advanced to account for great day's runs deserves some examination in the light of these abstract logs. It involves the assumption, contrary to Captain Learmont's allegations, and contrary also to what we have seen in the *James Baines*'s log, that the chip log underestimates the vessel's distance over the ground. According to this explanation, after several days of thick weather with no opportunity for time sights, the navigator finally obtains an astronomical position. His last noon position, a D.R. position, is in error by the cumulative total of several days' favourable current, so that a very ordinary run of, say, 300 miles, has added to it, say, 3 days of 2-knot current (144 miles), and is reported as 444 miles 'by actual observations'.

The *James Baines*'s log shows clearly that Captain MacDonnell's D.R. kept slightly ahead of the ship, and that nothing of this sort was involved. The computed run of 367 miles from the

D.R. position of the 26th to the observed position of the 27th, is, therefore, on the conservative side. If there is any validity to my adjusted calculation of 394 miles for the next day's run, we have a total of 761 miles in 2 days, in a period that began with wind force of only 6, and ended with wind of force 7.

Two claims of greater 2-day runs than this one are in Colonial Clippers. One is for the previous outward voyage of *James Baines*, with runs of 407 and 391 miles on 26 and 27 January 1855; the other is 430 and 360 miles by *Lightning* on 19 and 20 March 1857. If abstract logs of these passages are at Harrow, they will certainly repay examination.

I think that the main reason why later-day seamen question these runs from the 1850's (which were perfectly acceptable to such experienced contemporaries as Commander Maury and Captain Arthur H. Clark) is that they have no experience with a lightly laden vessel in the waters where these runs were made. It is noteworthy that all the 400-mile claims were either from the North Atlantic or from the Southern Ocean, always by a vessel steering to the eastward. In modern times, ballast passages in the North Atlantic were always to the westward, and ballast passages in the Southern Ocean were uncommon except among the Finnish 'grain-racers', manned mainly by boys and generally in poor condition.

A quick search of available German records gives the following day's runs for modern iron and steel vessels in ballast:

Vessel	Position		Date	Miles (nautical)
	From	To		
<i>Katharine</i> , iron ship	52° 06' S. 152° 40' W.	52° 12' S. 142° 39' W.	6-7 Oct. 1889	369
<i>Preussen</i> , steel 5 m. sh.	Headed for Iquique in 40° S.		23-4 Apr. 1903	368
<i>Potosi</i> , steel 5 m. bk.	55° S. 81° W.	49° S. 86° W.	10-11 May 1900	376
<i>Priwall</i> , steel 4 m. bk.	S. 78° E.	S. 88° E.	25 Dec. 1933	386
<i>Priwall</i> , steel 4 m. bk.	38° 2' N. 18° W.	34° N. 23° 6' W.	1-2 Nov. 1934	370

On her 1853 run, the *Sovereign of the Seas*, a vessel of 2421 tons register, was carrying 8000 barrels, or about 1600 tons dead weight, of whale oil. On her maiden voyage, the *James Baines*, 2526 tons, had only 1400 tons of cargo. If a nitrate carrier like *Priwall* could log 386 miles in 24 hours, I am quite prepared to accept log book entries of over 400 miles in a day for a lightly loaded clipper.

JOHN LYMAN

The excellent articles on 'Speed under Sail' by the late Captain Learmont in the *Mariner's Mirror* for August deals very capably with what has been a debatable point for many years. A critical examination of the claims of 450 miles per day made for the American ships of the 1850's is long overdue, and comes well within the province of our Society. If we do not challenge them, these figures will pass into history—as indeed they are doing—and be for ever a reproach to British and German ship designers, builders and seamen, whose records never showed a day's run of even 400 miles per day.

With the *Cutty Sark*'s maximum day's run of 363 miles and the *Preussen*'s 370 it is obvious that there is something wrong with the claims made for the American ships.

Perhaps there are other members of the Society for Nautical Research with experience in sail or other expert knowledge who could help to dissipate the confusion which exists on this matter.

E. BOWNES

Doubt is expressed as to the best day's runs of *Lightning* (436), *Donald Mackay* (430), *James Baines* (420). *Champion of the Seas* I omit for the reasons given. *Cutty Sark* in Basil Lubbock's books, is credited with two consecutive day's runs of 362 and 363, whilst Captain Woodget claims 353 as the best day's run under his command. These, I suggest, can be accepted.

Comparing the Mackay Cracks with the ex Tea Clippers we have (Basil Lubbock):

	Length	Tonnage
<i>Lightning</i>	244	2096 Builders
<i>James Baines</i>	266	2275 British
<i>Cutty Sark</i>	212.5	968 gross
<i>Thermophylae</i>	212	991 gross

All these ships had very fine lines and it seems to be reasonable that the bigger ships should have a higher maximum speed. That they did not make the fastest passages, the best being *Thermophylae*, 60 outwards, *Cutty Sark*, 72 days homewards (average $7\frac{3}{4}$), can be accounted for by the fact that the Tea clippers were much faster in light breezes, though the two mentioned could and were driven hard.

The German flying 'P's' were very large carriers of full lines and in spite of their length it would, I think, be impossible to push them through the water as fast as the Mackay ships.

The yacht *Satanita* was timed in the race mentioned to average 14 knots, and this on a water-line length of about 95 ft.; surely a fine-lined ship of 240 or more feet could add another 4 knots to this.

R. M. BOUSEFIELD

THE SOLITARY GRAVE OF DIEGO RAMIREZ ISLANDS

Sixty miles south-west of Cape Horn are located Diego Ramirez Islands covering a sea area of nearly five miles, and on Gonzalo Island, one of the many small islands making up this group, is the solitary grave of a young seaman who died 125 years ago. This grave is unique in that it has a very attractive marble headstone in excellent condition except that the action of time and the elements makes the following inscription difficult to read:

IN
MEMORY OF
THOMAS L THOMES
BORN IN PORTLAND
AUG 21 1813
DIED FROM ON BOARD
THE SCH---- HONZO
SEPT 30 1832
AGED 19 YEARS
I.H.P.

The word 'Honzo' is most difficult to decipher and could well read 'Monzo'. There is no indication of nationality, but it is safe to assume he was English or American.

The grave is well cared for by Chilean naval personnel stationed at the lighthouse and radio station on Diego Ramirez.

This young man must have been of a well-connected family since a marble headstone is quite rare in these icy south latitudes. The marker must have been erected during a later voyage of some ship to Antarctica.

It would be interesting to learn more of this young seaman and his family and the reasons why an expensive marble headstone was transported to this remote island 60 miles south of the Horn. The writer has a photograph of this grave which he would be pleased to turn over to any surviving member of the family.

EDGAR K. THOMPSON

THE QUEEN'S SEA FLAGS

Pepys's MSS. Miscellany IX, a portion of the table at p. 391. 'A Designation of the severall Flaggs and Colours used in the Royall Navy of England for distinguishing Degrees of command therin.'

The severall Degrees of command in use in the Navy of England.	The various Flaggs and Colours used in the Royall Navy					
	Standard	Anchor of the Lord Admir.	Union Jack Flaggs	Red Flaggs	White Flaggs	Blow
Lord Adm ^r of England	St. George's Flag King George's Head or Royal Coat of Arms on a white field	St. George's Flag The Royal Coat of Arms on a white field	-	-	-	-
Vice-Adm ^r of England	-	-	St. George's Flag a British ensign over it	-	-	-
Rear-Adm ^r of England	-	-	St. George's Flag a British ensign over it	-	-	-
Adm ^r of a Fleet of Ships or a Fleet with him	-	-	St. George's Flag	-	-	-
Adm ^r of White Squadron	-	-	-	-	St. George's Flag	-
Adm ^r of New-Squadron	-	-	-	-	-	St. George's Flag

Through the courtesy of Dr R. W. Ladborough
Pepysian Librarian, Madgalene College, Cambridge

Unfortunately, the above figure had to be omitted, because of lack of space, from the article which appeared in the previous issue. A brief interpretation of it was given in footnote 1 on p. 9. This table makes abundantly clear the fact that the three-flag combination of Royal Standard, Admiralty Flag and Union Flag, to-day and for over a century indicative of the presence of the Sovereign afloat, could hardly have originated at the Restoration in 1660 of Charles II; and certainly was not the practice during the reign of James II, to whom the introduction of the custom has been attributed perhaps more often than to this brother.

A. PEACOCK

THE SUSAN VITTERY

The three-masted schooner *Brooklands* 'the last wind-powered schooner registered in Ireland', sailed in the 'twenties and 'thirties in a rather different form from her early days as the *Susan Vittery* in the Azores fruit trade. Just after the First World War the *Susan Vittery* was almost rebuilt and rerigged at, I think, Whitstable. When she was launched at Dartmouth in 1859 she was a two-masted topsail schooner. She had a long overhanging counter, beyond which her main boom projected. An old schoonerman with whom I once sailed, had been in the *Susan Vittery*, on a

voyage to Crete when Turkish troops still occupied that island. He used to speak bitterly of her tremendous mainsail. In June 1940 we were alongside the *Brooklands* in Runcorn, and our old mate declared that she bore little resemblance to the *Susan Vittery* in which he had sailed nearly fifty years before.

I have a note about one of her voyages to the Azores. On 3 January 1860 John Kendrick, master, the *Susan Vittery* sighted the barque *Island Queen*, with 7 ft. of water in her hold and apparently sinking. Two boats' trips were made at considerable risk and the master and crew of the barque were rescued and landed at St Michaels. The master of the *Susan Vittery* received a telescope and the boat's crew of six received £10 between them, from the Board of Trade.

Later she was in the Newfoundland trade. I have a letter from the late Robert S. Munn of Harbour Grace, in which he states, 'I cannot say much of the old *Brooklands* excepting Vittery's craft were much in favor in Harbor Grace in the '60's, and he had several, *Edward Vittery*, *Little Nell*, *Little Reaper*. Capt. Cole was master of the *Susan Vittery*, when she was here in June 1873. She took a load of seal skins to Bristol—is the last entry I have of her.'

As the *Brooklands*, she sailed all through the last war under canvas alone. I saw her in April 1941 between the Helwick and the Scarweather Lightships, running with square foresail set, outward bound for Ireland.

MICHAEL R. BOUQUET

DOLPHIN STRIKERS

(See *M.M.*, Vol. 42, p. 238; Vol. 43, p. 166)

The master's journal of the U.S. frigate *Constitution* for 26 August 1798 includes the following entry: 'Carpenters employed fitting a Martingail.' She was then at anchor near Block Island; she was a new vessel and had been at sea about a month, and it seems clear from preceding entries that the work was the fitting of a new piece of gear and not the replacing of something that had carried away.

It appears from this, therefore, that in 1798 the dolphin striker or martingale boom was not yet being fitted to all newly built American vessels of the largest class, but that it was a simple device to install, well within the capabilities of a ship's own force. To use it meant giving up the possibility of setting a sail on the spritsail yard, but resulted in a well-stayed jibboom capable of carrying jibs to greater advantage than previously. Each time a martingale-equipped vessel beat her way past a windbound fleet in some narrow waterway, dozens of conversions to the new rig must have followed. Whether this first occurred in the Thames Estuary, in Øresund, or in the South China Sea hardly matters.

JOHN LYMAN

I am grateful for Mr James Ferguson's attention to my problem of establishing the introduction of the dolphin striker. I knew of the *Fair American* model at Annapolis but, like Mr Ferguson, I doubted its accuracy; in fact I am inclined to consider this model wholly a reconstruction by guess. I would like to point out that there are many models of ships before 1790, in museums in Europe, showing dolphin strikers. However, the possibility that these were added during some repair during the nineteenth century is always present. I am still inclined to the theory that dolphin strikers came into actual use during the American Revolution.

HOWARD I. CHAPELLE

BRUEGEL VERSUS LOPES

I regret having to disagree with Commandant L. Guilleux la Roërie, when, in his contribution 'More about the Ship of the Renaissance' (*M.M.* August 1957, pp. 186-8), he describes Peter Bruegel the Elder as a mere copyist of the ship types outlined by the Portuguese painter Gregorio Lopes and conscientiously altering them to bring them up to date.

Taking for granted that Bruegel did know the Gregorio Lopes panels—which is not at all certain—the question arises what necessity there was for the Fleming to crib the models of his Portuguese fellow artist.

During an important part of his rather short life, Bruegel resided in Antwerp, which was then at the zenith of its development, being probably the most important port of the then known world. Ships of most of the seafaring nations, southern as well as northern, met there: he had the originals to draw from at his discretion.

Besides, in the beginning of his artistic career, Bruegel voyaged in Italy; he certainly visited Naples, and probably Messina, where he came in contact with the peculiar shipping of the Mediterranean.

I am convinced that Commandant la Roërie will not question Bruegel's ability to draw ships 'from life'. There is no doubt that his pictures are genuine documents, conveying true and first-hand evidence on the condition of the art of shipbuilding in his days.

I wonder why Commandant la Roërie charges Bruegel with shyness in designing ships. In fact, he featured sixteen *different* types. Furthermore, his pictures do not show the customary uniform, plastic sea of his predecessors, but render the ever-changing mood of the water; he thus inaugurated new conceptions which still continue to lead marine art.

O. BUYSSENS

SHIPS BUILT AT IPSWICH IN 1741-2

Some part of Mr Jones's final paragraph (1957, p. 303) must have gone astray. The first four lines refer to the *Hampshire*, which measured 108 ft. 3 in. (keel) by 38 ft. 6½ in. The rest refers to the *Granado*, though it is a little deceptive to credit her with 28 guns. A list of 1747 gives her 12 guns and 14 swivels; if she carried 2 mortars, she may actually have had 28 pieces of artillery, but she was not what one would normally understand by a 28-gun ship. The reference to Charnock should be to Vol. 3, not Vol. 2.

R. C. ANDERSON

GUNS AND GUNNERS OF OLDEN TIMES

When the writer of this note was a boy, the old 32-pounder guns on wooden truck mountings had already passed away; but not so many years before. Some old ships such as the Gem-class corvettes *Diamond*, *Amethyst*, and so on were still in existence; laid up in ordinary in the dock yards. The *Alexandra* flagship of the Mediterranean Fleet still had muzzle-loading guns, but not on trucks.

My own experience with truck guns was when I was navigator of a sailing brig, and I can still remember the ancient drill and words of command: 'Two handspikes, muzzle right.' The handspike men got their handspikes under the rear trucks on the right-hand side, and jogged the breach of the gun across the deck to the left, assisted by the left-side training tackle. When the gun jammed in the port, the Gunner's mate bawled 'Well', and proceeded with the orders for 'sponge and load', 'Elevate', etc. Elevating was carried out by levering up the breach with two handspikes, while No. 2 shoved a quoin, or wooden wedge, under it and gave the word 'down' to the handspike men, who then withdrew their handspikes. It was all rather picturesque; but hardly very valuable training for young seamen even in the 1890's.

In the battleships of the 'Admiral' class: *Anson*, *Camperdown*, *Rodney*, etc., we had 13.5 in. guns, mounted *en barbette*, capable of throwing an enormous projectile across the Strait of Gibraltar, say 14 miles. But target practice with these monsters was carried out at a range of 1200 yards, which, it was then believed, would be the maximum distance at which a fleet action would be fought. Nobody in the Navy at that time had ever seen a fleet action. The great guns indeed were far ahead of their time, and of the mentality and knowledge of the people who used them.

But even at 1200 yards, and in broad daylight, ships very seldom, if ever, hit their target; nobody expected them to. If the shot *appeared* to go somewhere near the target—as viewed from behind the gun—everyone applauded and cried, 'Good shot, Sir! By Jove, that would have hit a ship.' As a matter of fact it was quite likely to have gone 200 or 300 yards over or short, because judging the fall of shot, from behind the gun, is very deceptive, and observations from a position at right angles to the range were seldom taken.

I remember on one occasion a marine gun's crew actually did hit and demolish the target, and thereby incurred the severe displeasure of everybody. Of course, it could only have been a beastly fluke anyway; and hoisting out a boat and sending her away with carpenters, and shipwrights, and baulks of timber, and all the rest of it, was a confounded nuisance, and a great waste of time. The marine subaltern was very properly given half a dozen of the best over the Wardroom table, and warned to be more careful in the future.

Nowadays, I believe, shooting is carried out by radar at an object out of sight, below the horizon.

But to return to the real good old days. In actions such as Trafalgar and the Nile, accurate gun-laying hardly came into the picture at all. Ships lay alongside one another, and blazed away, muzzle to muzzle, till one or the other gave in from sheer exhaustion, and the frightful carnage, and struck her colours.

In frigate and single ship actions, however, gunnery did count, and victory was sometimes due entirely to the high degree of training and fire discipline of a ship's company.

After Trafalgar things appear to have got pretty slack in the Fleet (it always happens). Spit and polish, and sail drill smartness came to be regarded as the things that bought promotion. But what a rude awakening we got from the Americans in 1812!

Happily there were still some serious and dedicated men like Philip Broke of the *Shannon* who had insisted on intensive gun training and fighting efficiency, and we know now how those qualities could, and did, win the day. The *Chesapeake* was beaten in eleven minutes and taken in fifteen.

Those that saw that ship as she entered Halifax, with her battered sides, and her white streak dotted like a plum pudding with well-levelled shot, began to wonder how it was that other ships could not shoot like the *Shannon*.

The events at Navarino in 1827 showed how little skill in shooting had entered into naval gunnery at that period, and how little we had learned during the preceding two decades.

It is estimated that the *Genoa* expended at Navarino 7089 lb. of powder and about 30 tons of round shot, equivalent to 2100 32-pounder shot; a quantity of metal sufficient to 'open a breach 65 ft. wide in the ramparts of Badajoz at a range of 600 or 700 yards'. Yet the First Lieutenant stated at the Court Martial that the enemy was so close that he could plainly see the whites of their eyes, and that the *Genoa* 'continued to batter that one Turkish ship for about three hours and a half, the 2 vessels being broadside to broadside, and did not diverge from the parallel position for above 2 hours'. Perhaps it is as well to recall that this battle was fought at anchor.

What then became of the 30 tons of round shot? for there was certainly no 65 ft. breach on the sides of the Turk. Some of it hit our own ship the *Albion*, and most of the rest passed harmlessly over the bulwarks of the foe. The *Albion* herself expended 11,092 lb. of powder and 52 tons of shot, equivalent to 3640 32-pounder shot, literally in beating the air, for she did not sink or seriously damage a single ship.

The shooting of Codrington's own flagship the *Asia* was not much more effective, for though anchored within pistol shot of her opponent, she expended the equivalent of 2800 32-pounder shot and 9289 lb. of powder with less damage to the foe than would have done three or four hitting broadsides. It all sounds well nigh incredible, but the figures are official.

Three single-shotted broadsides from any one of the three ships mentioned would not have exceeded 120 shot of the united weight of 1 $\frac{3}{4}$ tons, and no doubt many double- and treble-shotted guns were fired into the air on that day.

The Turks were eventually overpowered. It could hardly have been otherwise, and people in England celebrated a great and glorious victory. If they only knew!

The first serious attempt at really teaching officers and men something of the *science* of gunnery was the establishment of H.M.S. *Excellent* as a gunnery school at Portsmouth in 1832—5 years after Navarino.

This certainly did give some impetus to skilful shooting at sea and established a uniform system of gun drill throughout the Navy.

Target-hitting, however, was still but little regarded as a criterion of a smart ship, and professional advancement was far more likely to come from perfection of organization and superlative efficiency in sail drill, and also (let it be whispered) from fancy work and spit and polish.

These last two reached their zenith towards the end of the 1890's.

I remember in 1896, the first-class cruiser *Hawke* which vied with the flagship *Ramillies* in the Mediterranean for being the smartest ship in the fleet; having burnished every bit of metal on and around the quarterdeck, the Commander, Cecil Burney, decided that the one thing needed to make for perfection was to burnish the two huge anchor davits on the foc'sle!

Piping everybody aft, he told the ship's company of his plan, and then said, 'When the anchor davits shine like silver, I shall call the watch every afternoon for a fortnight.'

Naturally everybody, from the captain of the maintop to the cook's mate, had a go at the old davits in his watch below, and in an amazingly short time the job was done. But alas, the C.-in-C. decided that this spit-and-polish mania had gone far enough, and ordered Burney's beautiful silver davits to be painted white like his own. A bitter blow: but the Commander got his promotion in due course and became a well-known admiral. Anyway it was just mean jealousy on the part of the *Ramillies*. (Or so it was believed on board the *Hawke*.)

A. MACDERMOTT

'KEEPING THE LAY IN'

If one holds a piece of rope in one's (separated) hands and twists it so as to increase its torsion a fale or loop will form that lies away from one's body. If the rope be right-handed the part leading to the right hand will be uppermost where the parts cross at the neck of the loop, if right handed that leading to the left. Conversely, if one coils a rope in the way the loop was formed—counter-clockwise with each loop nearer one than the preceding one, or clockwise with each loop farther in the case of right-handed rope—one increases its torsion, or, as sailors said, one 'Keeps the lay in'. In reeving lanyards and tackles the sailors of the oak and hemp era attributed great importance to keeping the lay in, as they believed it added materially to the life of the rope. Thus if one were to reeve a topsail halyard on the starboard side—with right-handed rope—so that the hauling part lead off, one began by taking the end from the coil of new rope, passing it first forward through the outboard sheave of the upper block then aft through that of the lower, then so on, taking each turn counter-clockwise (to one facing outboard) and nearer one than it's predecessor. When all the sheaves were filled and the standing part made fast, one tested the halyard for length (the admonition was: 'Reeve and cut, don't cut and reeve') and cut it from the coil. If the halyards were on the port side (all else being the same), one passed the end first forward through the inboard sheave of the upper block and passed the turns clockwise.

It was not always possible to observe this precept. Thus if circumstances required that the standing part of the lanyard were in the after hole of the port and in the forward one of the starboard deadeyes and if the lanyard were right-handed, it was impossible to reeve it to keep the lay in. Again it was a very usual if not the general practice (I have been told it was *not* in the Royal Navy) to take the turn of the shroud around the deadeye so as to take the lay out. I was told if this were not done that when the shroud was 'broken in' (when the end was bent up alongside the standing part before passing the quarter and end seizings) the strands would separate at the curves of small radius that resulted immediately above the throat seizing. Also, since the hauling part of the cat-falls issued from the forward sheave of the cathead one could not keep the lay in the starboard one if it were of right-handed rope. I remember being told why it was imperative that the hauling part so issue; I have forgotten it and, to-day at least, do not perceive the necessity. As far as I recall, these were the only deviations from orthodoxy that were sanctioned.

The terms used by sailors that referred to turning in deadeyes are often misleading to non-nautical persons, because they used 'end' with different and unusual meanings. If they wished to indicate that the deadeyes had been turned in in the ordinary way and not 'cutter stay fashion', they said they were turned in 'end up' here meaning by end the actual extremity of the shroud. But if the turn of the shroud around the deadeye were taken clockwise (to one facing outboard) they said the end was aft in the port deadeyes and forward in the starboard, now meaning by end the part of the shroud adjacent to the end situated between the bottom of the deadeye and the throat seizing. Also if in the above case the standing part of the lanyard was in the after hole of

the port and the forward one of the starboard deadeyes—as it nearly always would have been—it was said that it was 'under the end'. When it was said that 'the end should be in' it was meant that where the parts crossed at the throat seizing that leading to the end should be inboard. Actually after about 1840 at least the actual extremity was on the inboard side of the shroud. The plates of Lever and Lescallier show it on the forward or after side, but I suspect it was always inboard. This protected the end from water and abrasion to a certain extent and made it less likely that the bight of some rope might catch in the fork constituted by the projection of the extremity beyond the end seizing, while putting it forward or aft had no advantage. The Dutchman Lecomte (*Praktikale Zeevaart-Kunde*) in his plate shows the shroud as do Lever and Lescallier, but in his text he explains that this was only done to render the seizings more visible, that the end should have been inboard.

D. L. DENNIS

ENGLISH AND SPANISH TONNAGE IN 1588

The traditional belief that the great ships of the Spanish Armada were bigger than any of their English opponents has been examined (N.R.S. *Armada Papers*, Vol. 1, xlvi) and its falseness exposed, but it dies hard. Almost certainly there are still more people who believe that the best of the Queen's ships alongside a great Spaniard was as a sloop-of-war to a first-rate, than there are who realize that the biggest of Elizabeth's ships were not only individually as large as the biggest and best of the king of Spain's, but also much more powerfully armed.

What is undoubtedly true is that there were in the Spanish fleet many more great ships than in the English; but while all the large English ships were well armed, not half of the Spaniards were men-of-war, the rest being merely transports with an inconsiderable number of guns.

When an attempt is made to reach a detailed comparison of the size of the ships of the two fleets, several difficulties are met with. In 1588 systems of tonnage measurement were in their infancy in both countries and Rules only in the making. In England a simple rule had been introduced in 1582 (Oppenheim, *Administration of the R.N.*, pp. 132-3) and this or a modification of it was used in 1588. In Spain a more elaborate rule was adopted in 1590, and it is probable that it or something very like it was used in 1588.

In all countries estimates of the size of ships had to be based on consideration of their length, breadth and depth; but each of these dimensions could be measured in several different ways. The result of multiplying these three dimensions together was a 'solid number' giving the contents of the rectangular solid described about the ship's underwater body. This body was much smaller than the circumscribed rectangle, and in different countries different deductions were made from the solid number in order to arrive at an estimate of the ship's size. Since the shipwrights of the sixteenth century, and indeed of the seventeenth, did not know how to calculate mathematically what deduction should be made, they adopted various formulae which seemed to square with experience. They did not trouble themselves about the displacement of the ship, but set out rather to arrive at her dead-weight capacity. At first sight this seems a poor way of measuring a man-of-war; but the explanation is that early methods of tonnage measurement were intended for use in merchantmen in the days when royal fleets, in Spain even more than in England, consisted chiefly of ships hired from merchants. This method, modified in detail, established itself to the exclusion of any other; during the whole era of sailing men-of-war they were measured by their potential capacity as cargo-carriers.

The original English rule of 1582 was very primitive. To get the capacity of the hold you multiplied together the length of keel (to the 'touch'), the extreme beam inside plank and the depth from the top of the keel to the line of greatest breadth, thus obtaining your solid number. First you measured a ship of known carrying capacity: say a ship 50 ft. by the keel, 20 ft. beam, 10 ft. depth. The solid number came to 10,000 and the ship, *by experience*, would carry 100 tons in cask or $100 \times \frac{4}{3}$ tons of close-fitting cargo. Her tonnage was therefore 100 and her 'ton and tonnage' (deadweight) 133 $\frac{1}{3}$. When you wished to know what a new ship would carry, you compared her solid number with that of the known ship. If it was half as big again, i.e. 15,000 she would carry 150 tons in cask or 200 tons in 'merchant' goods'—and so on.

It was very soon seen that this method was clumsy and the solid number was simply divided by 100 to get the cask capacity with one-third of that added for the capacity in merchants' goods. The result was the same as that obtained by the original 'rule of three' method, so that there is no need to enquire which method was actually used in 1588.

But this does matter, that in the best-known list of the tonnage of the English ships engaged in the Armada campaign, the figures set down are not true tonnages, but *ratings*, on which the scale of pay of their officers depended. This fact has been universally overlooked. Six rates of pay were established in 1582 (Oppenheim, 153) and ships were assigned to these in a fairly flexible manner. In 1578, for example, 16, that is half, of the Queen's ships were rated lower than in 1588, five of them by as much as 100 tons. It was an obvious economy to rate ships as low as possible; but there was also the consideration that, when the prizes of a campaign were distributed to the captors, including the owners of the ships, in proportion to tonnage, it was to the advantage of the Queen that her ships should be rated high. This seems to have been done in some of the 'joint stock' expeditions of the reign, in which a few of the Royal ships took part; but it does not seem to have been the case in the great campaign which called out the whole Navy Royal. The explanation may be that the campaign was defensive; that prizes on any scale were not expected; and that the economy of wages resulting from a low rating of the ships was certain.

As will appear from the figures which follow, the English ships in 1588, though not rated as low as during the preparations in 1587, were still rated considerably below their real tonnage. There are a few exceptions, flagships being put at about their proper tonnage or even above it, while private ships, on an average, were rated some 20 per cent below their measurement.

The Spanish system of measurement served the same purpose as the English, to discover what cargo a ship could carry. It differed from the English rule in one fundamental respect; it gave no result corresponding to the English smaller tonnage, the capacity of a ship in cask. The reason for this was that Spain grew her own wine, while England imported hers and from a very early date the capacity of English ships had been indicated by the number of tuns of wine they could carry in the Bordeaux trade. The Spanish formula gave only the dead-weight capacity, the full load which a ship could carry; its result corresponded to the larger English figure, the 'ton and tonnage' obtained by adding one-third to the tonnage measured in cask. However clumsy the empirical methods of the sixteenth century might seem to Lloyd's surveyors of the present day, there is no doubt that they served their purpose well enough. It is strong evidence in favour of both the English and Spanish formulae that, when they are applied to the same ship, the results differ very little.

At first sight this seems to contradict the thesis that in the Armada campaign the rule of measurement used made the Spanish ships appear bigger than they were. The explanation, however, is simple. When a ship in Spain was armed for war, an addition of 20 per cent was made to her tonnage to represent the space given up to the accommodation of her fighting crew. Thus a ship which, as a merchantman, measured 500 tons, rose when fitted out for war to 600 tons; one of 250 tons rose to 300, and so on. No corresponding addition was made to the tonnage of English ships; on the contrary, as has been seen, these, when commissioned for war, were usually, though not invariably, rated at less than their measured deadweight tonnage. A good example is provided by the *Dreadnought*, which was rated at 360 tons in 1587 and at 400 in 1588, whereas her actual deadweight tonnage was 480 tons by the English rule and 478 by the Spanish, and her war tonnage by the Spanish rule, with 20 per cent added, became 574 tons.

As the dimensions of most of the English Royal ships of 1588 are available, it is possible to calculate their tonnage by the Spanish rule and thus show how the English and Spanish tonnages compare. It is not possible to make similar calculations for the Spanish ships, for of them no dimensions are to be had.

By the Spanish method the greatest beam inside the plank was first measured; then the depth from that line to the bottom of the keel; then the length through the line of greatest breadth. This length, the *esloría*, was therefore not the keel-length, as in England, but very nearly the English gun-deck length. The often-quoted Spanish maxim that a good ship should be designed on the principle of 1, 2, 3 meant that the beam should be twice the depth and the length three times the

beam. This rule referred to ships of the pre-galeon era; galeons were about $3\frac{1}{2}$ beams long, or rather more.

Spanish tonnage was obtained by multiplying length \times breath \times half depth. This gave a 'solid number' for the *upper half* of the hold; the lower half was left out of account as affording no room for cargo, because what space in it was not filled with the timbering of the ship was filled with ballast. This upper half was not very far from being a rectangle, because so high up the ends of the ship were very blunt, but a deduction of 5 per cent was made from the solid number for entrance and run. The result was divided by 8 to obtain the dead-weight tonnage and 20 per cent was added to this for war tonnage.

As an example we may work out the tonnage of the same ship by the two methods, English and Spanish. The *Dreadnought* measured 80 ft. on the keel and had a beam of 30 ft. and depth of 15 ft.; the sum of her fore and after rakes was 36.3 ft.

By the *English rule*:

$$\frac{L \times B \times D}{100} = \frac{80 \times 30 \times 15}{100} = 360 \text{ tons,}$$

her capacity in cask, and $360 + 360/33 = 480$, her deadweight tonnage. It should be mentioned that sometimes the deadweight was reckoned by adding $\frac{1}{4}$ instead of $\frac{1}{3}$. This is the case in the list of 1602 (Oppenheim, 124), the most detailed available.

By the *Spanish rule*: beam is as in England, but length = keel + $\frac{1}{10}$ of the sum of the rakes, this being as near an approximation to the *esloría* as it is possible to get. Depth is measured to the bottom of the keel; therefore, to arrive at it, the depth of the keel itself must be added to the English measurement. Finally feet must be converted into Spanish cubits at the rate of 1 cubit = 1.9 ft. This gives a length of 59.3 cubits, a beam of 15.8 and a depth of 8.6. The Spanish formula being $\frac{\frac{1}{10}L \times B \times \frac{1}{2}D}{8}$ we get 478 *toneladas* 'merchants' tonnage' and, with one-fifth of this added, 574 'for the King'.

The figure for the English fleet as a whole may be tabulated:

	Rated in 1588	By rule of 1582	By rule of 1582 plus $\frac{1}{3}$	Spanish net	Spanish war
<i>Triumph</i>	1100	760	1013	1016	1220
<i>White Bear</i>	1000	732	976	929	1127
<i>Elizabeth Jonas</i>	900	684	912	931	1117
<i>Victory</i>	800	565	753	808	970
<i>Ark Royal</i>	800	555	740	750	900
<i>Bonaventure</i>	600	448	597	580	696
<i>Rainbow</i>	500	384	512	493	592
<i>Golden Lion</i>	500	448	597	580	696
<i>Vanguard</i>	500	449	598	566	680
<i>Revenge</i>	500	(441)	(588)	(575)	(690)
<i>Antelope</i>	400	341	455	478	574
<i>Dreadnought</i>	400	360	480	478	574
<i>Mary Rose</i>	600	476	635	630	756
<i>Nonpareil</i>	500	357	476	489	587
<i>Hope</i>	600	416	555	514	617
<i>Swiftsure</i>	400	333	444	431	517
<i>Swallow</i>	360	333	444	343	412
<i>Foresight</i>	300	294	390	385	462
<i>Aid</i>	250	256	341	322	386
<i>Bull</i>	200	193	248	249	299

	Rated in 1588	By rule of 1582	By rule of 1582 plus $\frac{1}{3}$	Spanish net	Spanish war
<i>Tiger</i>	200	149	199	158	197
<i>Tramontana</i>	150	132	176	219	263
<i>Scout</i>	120	132	176	167	200
<i>Achates</i>	100	104	138	135	162
<i>Charles</i>	70	71	94	87	105
<i>Moon</i>	60	60	80	78	94
<i>Advice</i>	50	42	56	53	63
<i>Merlin</i>	50	—	—	—	—
<i>Spy</i>	50	42	56	53	63
<i>Sun</i>	40	39	52	51	61

The figures for the *Aid*, *Bull*, *Tiger*, *Scout* and *Achates* have been supplied from a list of about 1594 not used by Laughton.

The following Spanish ships were of 900 tons or more (roughly 750 tons by English measure): *San Martin* 1000, *San Juan* 1050, *Gran Grin* 1160, *Rosario* 1150, *Santa Ana* 1200, *Regazona* 1249, *Trinidad Valencera* 1100, *Florencia* 961, *San Francesco* 915, *Duquesa Santa Ana* 906, *San Bartolome* 976. *N.S. de la Rosa* 945, *San Salvador* 958. *Trinidad de la Scala* 900. Of these only three were galleons; the rest were classed as *nave* or *nao*.

A final comparison of the two fleets as a whole, omitting all pinnaces, zabras and the like, may be made as follows again using Spanish tonnages.

Tons	Spanish	English
Over 1000	7	3
900	7	2
800	10	None
700	11	1
600	11	5
500	18	8
400	7	4
300	8	28
Galleasses	4	—
	83	51

The Spanish numbers include all the hulks, etc., used as transports. If, as Drake said, not half of them were men-of-war, the English had a majority in efficient ships.

L. G. CARR LAUGHTON

THE HALKETT BOAT AND OTHER PORTABLE BOATS

In 1827 Captain W. E. Parry attempted to reach the North Pole from Spitzbergen by dragging boats on sledges over the ice. It is clear that his failure was partly due to the great weight of his boats.(1) Until the introduction of lighter and reliable materials, however, no appreciable reduction in the weight of the boats could be achieved.

The new material came in 1823 when Charles Macintosh patented his method of waterproofing fabrics with caoutchouc. In 1825 Thomas Hancock invented a substitute for leather made from a sandwich of wool, cotton, hair, etc., saturated with a solution of rubber and glue.(2) In 1824 John Franklin took with him to the Arctic *life preserver* air pillows made from Macintosh cloth. In 1824 Parry used rubber cloth for the canvasing of two boats in frame, for air pillows and waterproof clothing. In 1827 he used this material for waterproof bags for provisions. Later it was used as a waterproof cloth for tents.(3) Experiments with portable boats began in 1825 for Franklin's expedition down the Mackenzie River. He was given a waterproof canvas boat 'so

admirably contrived that it may be separated into pieces which each of the party may stow into his knapsack or carry in his pocket'. For this, Macintosh cloth was used. The boat weighed 85 lb.(4)

Another inventor in this field was Lieutenant Peter Alexander Halkett, R.N. He was born about 1820, and was the son of John Halkett who was one of the directors of the Hudson's Bay Company. He entered the Navy in 1835, passed for Lieutenant in 1840, and was promoted in 1844. In these years he served in the Mediterranean and the Far East.(5) His first experiments were made at Kew where he apparently lived with his father at *The Wick*, a pleasant Georgian house at Richmond Hill. When he began them is not known. It may have been in the first half of 1842, or between March 1843 and August 1844 when he was on half pay. That the boat was not patented suggests that it was finished when he was serving.(6)

The first certain date is November 1844. He then paddled with an umbrella sail from the *Caledonia* to the *St Vincent* in the Experimental Squadron in the Bay of Biscay. He arrived in the latter ship safe, sound and dry. Although this was not considered worthy of note in the log books, Rear-Admiral Sir David Milne, commanding the Squadron, wrote to the Admiralty about the boat, towards the end of January 1845. The Admiralty ordered a boat of this type and one of his larger boats to be made and tested at Portsmouth and Spithead. In May 1845 the Second Secretary of the Admiralty, John Barrow, described it as 'extremely clever and ingenious and that it might be useful in Exploring and Surveying Expeditions and they [the Lords of the Admiralty] do not consider that it would be made applicable for general purposes in the Naval Service'.(7)

The Boat Cloak was a semicircular piece of material, 9 ft. wide and 4 ft. 4 in. deep. Inset in this was the inflatable body of the boat, oval in shape, about 7 ft. 1 in. in length and 3 ft. 6 in. broad. The space inboard was 3 ft. 5 in. by 1 ft. 4 in. On land, the middle of the diameter of the semicircle formed the collar of the cloak while the rest of the sheet fell to the ground as a cloak—rather like the present-day service ground sheet. There was a nozzle for inflating the boat.

The cloth boat was 9½ ft. long and 4 ft. 9 in. broad. It comprised an inflatable interior and a canvas cover. It was oval in shape. In 1850 the black canvas boat, with paddle, bellows, and cover cost £18.

In 1845 Sir George Simpson, Governor of the Hudson's Bay Company, took one of Halkett's boats with him to Canada for use of the proposed land Arctic expedition. However, the expedition did not begin until 1846. Sir John Richardson and Dr John Rae took his boat with them. One of these boats was presented by John Barrow and was named *James Fitzjames* after the commander of the *Erebus* in Franklin's expedition. It seems that Macintosh who supplied the materials was negligent and the boat did not reach Liverpool in time for Richardson's steamer. One of Halkett's double cloth boats was at this time being prepared for Sir John Franklin.¹ Franklin wrote on 31 March 1845, from Lower Brook Street, to say that he would willingly give up his boat to Richardson.(8)

In the end Richardson received his boat and it was widely used by Dr Rae in his explorations. He used it for setting and examining his fishing nets in Repulse Bay. He preferred it to the canvas canoe, as it called for no repairs, although it was used on a rocky coast. Rae thought it should be used by all land and sea surveying parties. He named a point on the west coast of Melville Peninsula after Halkett. This boat carried two men and over two hundred-weight of stores without being overloaded. Rae found that it stiffened in low temperatures, but it could be warmed gradually when wanted. He used this air boat in his expedition of 1848–49 to Coronation Gulf and Victoria Land.(9)

Dr Rae brought this boat home to Kirkwall, and towards the end of the last century he gave it to his friend, Miss Peace. For well over half a century it lay unnoticed in the loft of Messrs Peace's timber yard. Soon after his arrival in 1954 Mr John Bremner, Harbour Master at Kirkwall, heard of it, and arranged for it to be deposited in the museum at Stromness, only a

¹ This was probably due to the interest shown by John Barrow, but it may have arisen from the fact that Lieutenant Halkett was a friend of James W. Fairholme, third lieutenant of the *Erebus* (*Athenaeum*, 1851, p. 1283).

few miles away from Dr Rae's birthplace. It is 8 ft. 8 in. long and 3 ft. 4 in. broad. Through years of neglect it has become flattened and warped. The canvas is stiff and brittle with age, and the black paint is dry and powdery. It is almost the same as the illustrations in Halkett's book, but there are a couple of D-rings for mooring, and four small pockets which may have been used for stiffeners. There are also two canvas and rope fenders, 19 in. long and 22 in. in circumference, filled with granulated cork.

Other Arctic expeditions used Halkett's boat. Chief Factors James Stewart and James Anderson took such a boat in their search for the mouth of the Great Fish River for Franklin in 1855.⁽¹⁰⁾ This boat was taken by some of the expeditions which went by sea. Captain Ommaney of H.M.S. *Assistance* left two Halkett boats at Cape Walker in Barrow Strait. It seems that two boats (adapted for use with two paddles) were taken by Collinson and McClure in H.M.S. *Enterprise* and *Investigator* in 1850-5 when they began the search from Bering Strait. When these two ships were fitting out at Woolwich, Lieutenant Halkett went on board the *Enterprise* in his own boat which he inflated in one minute. It weighed 30 lb. and he rowed it with a small double scull. He also demonstrated the use of a Macintosh overcoat weighing 20 lb., which could carry one person and could be propelled by two small oars which looked like Chinese fans. Collinson said that he found Halkett's india-rubber boat to be of great value, and it was in constant use. He said it weighed 46 lb., and carried five persons.⁽¹¹⁾

Lieutenant Joseph René Bellot of the French navy was using a Halkett boat to carry the contents of his sledge to the shore in Wellington Channel when he was drowned on September 1853. The black painted boat with the bellows and a tin can containing an Admiralty chart were picked up on an ice floe by Sir Edward Belcher. (Halkett subscribed £20 to the Bellot Memorial Fund.) Belcher considered boat sledges or Halkett boats to be essential for work in the autumn. Dr Kane, an American explorer, also considered Halkett's boat to be essential. In 1857, on the last Franklin search, in the *Fox*, Captain F. L. McClintock took one of Halkett's boats, and used it at Pond's Bay. But apart from this he seems to have made little use of it. Despite the many favourable comments, the Halkett boat never came into general use. It was evidently on show at the Great Exhibition of 1851.⁽¹²⁾

Halkett made an india-rubber cloth boat which was propelled by two paddles. It had a canvas cover, which could also be used as a ground sheet. It was 9 ft. long and 4 ft. 9 in. wide uninflated. He also began to design an inflatable canvas life boat without a wooden framework, but his service duties prevented its completion. It would have taken thirty or forty persons and would have been 30 ft. long and 16 ft. broad. He also designed light gutta percha sledges or boats (11 ft. 6 in. x 3 ft. x 1 ft. 3 in.) which were supplied to Captain Austin's search expedition in 1850. They carried seven or eight hundredweight of provisions and could be used to float the sledges. When turned upside down they could be used as a shelter for the night. At the four corners of the sledge, light iron stanchions were erected in sockets to support the gutta percha covering. The weight was 20 lb.⁽¹³⁾

Lieutenant J. B. Cator of the *Intrepid* recorded in his log: 'The Gutta percha boat has been perfectly useless during the season... being so leaky... also being badly constructed having no floor causing her to be very crank and very easily upset also much heavier than she was intended to be.' The log of the *Pioneer* (Lieutenant Sherard Osbourne) recorded: 'Found the Gutta Percha sledge to be a failure on account of its brittleness in a low temperature.' Captain Ommaney reported that his boat was rent in many places because of the frost, too: he found it convenient for packing the gear. This boat was preferred when it was made of oiled canvas. McClintock recommended that this 'sledge' should be made of a material that would be pliable at all temperatures.⁽¹⁴⁾

Lieutenant Halkett produced several other inventions. In 1853 he made an improvised ink-stand and an apparatus for raising and lowering ships and other heavy objects submerged or otherwise. Two years later he patented the use of locomotive power for the cultivation of land, described in 1857 in his *Guideway Steam Agriculture*. During the years 1839-51 he probably lived with his father at *The Wick* when he was not at sea. In the 1850's his address was Wyndham's Club. He died at Torquay on 23 March 1885 at the age of sixty-five.⁽¹⁵⁾

Goodyear made a portable rubber boat for emigrants in the gold rush to California. Another boat¹ was constructed by the Gutta Percha Company, 18 Wharf Road, City Road, London, who were manufacturers of speaking tubes, panelling, mouldings, cornices and picture frames. This boat (presented by Messrs Searle of Lambeth, the builders of Belchers light yawl) was used by Captain C. C. Forsyth in the *Prince Albert* in 1850, and by Captain Austin. It was designed by Mr Bonney, Exeter Place, St John's, Fulham. Its dimensions were 17 ft. by 5 ft. 10 in. by 2 ft. 4 in., with stem and stern alike; it could hold forty men. It weighed 18 lb. and drew 3 in. of water.

W. P. Snow, who was clerk in the *Prince Albert*, said: 'I worked her pretty sharply. She answered most admirably. In ice, in open water, under sail or as a row boat she proved the best boat I had ever been acquainted with....' Captain Forsyth said it was not in the least damaged by the young ice. It was brought back to England in as good condition as when it left, although it did all the rough work of the voyage. One gutta percha boat with two oars was supplied by the *Pioneer* to Sir John Ross in the *Felix* in August 1851, but there is no record of its performance.⁽¹⁶⁾

About this time Edward Lyon Berthon was experimenting with a collapsible inflatable boat which he patented in 1851. It was made of two skins of canvas saturated with india-rubber, and divided into eight compartments. It cost between £45 and £100. Many years later it was used by Captain Nares's expedition towards the North Pole. Thomas Hancock also devised a portable inflatable boat, almost 23 ft. long, with a wooden frame which provided thwarts and rowlocks.⁽¹⁷⁾

In the early 1850's Messrs Dyne and Haggard invented a collapsible boat, which they offered to the Admiralty for the Franklin search. It had a wooden framework, ribs and seats, but the body of it was made of inflatable gutta percha cushions and had a collapsible gutta percha covering which gave complete protection to the crew.⁽¹⁸⁾

SOURCES

- (1) *Antarctic Manual*, London, 1901, p. 304; F. L. McClintock on Arctic Sledge Travelling.
- (2) Patent Office, Patents 4804/1823 and 5125/1825.
- (3) Macintosh, G., *Biographical Memoir of the Late Charles Macintosh*, F.R.S., Glasgow, 1847, p. 87; *Courier*, 27 July 1824. Parry, W. E., *Narrative of an Attempt to Reach the North Pole in Boats*, London, 1828, p. 72. Markham, C. R., *My Life in the Navy*, Vol. 3. *Arctic Expedition, 1850-51* (MS. at Royal Geographical Society), p. 217. *Antarctic Manual*, p. 298.
- (4) Macintosh, G., *Ibid.*, p. 87, *Courier*, 25 February 1825.
- (5) Public Record Office, Ad 9/34/1616 (b), Record of Service.
- (6) Halkett, P. A., *Boat-Cloak, or Cloak-Boat*. Richmond, 1848. (Not paginated.)
- (7) Halkett, 1848.
- (8) *Journal of Royal Geographical Society*, 1855, p. 249. Halkett, 1848; copies of letters in Patent Office copy.
- (9) Halkett, 1848. Rae, J., *Narrative of an Expedition to the Shores of the Arctic Sea in 1846 and 1847*. London, 1850, pp. 5, 116, 153, 176.
- (10) *Journal of Royal Geographical Society*, 1856, pp. 19, 23; 1857, pp. 323, 324-6.
- (11) *Additional Papers*, 1851, p. 34. Arrowsmith's Map of the Arctic Shores of North America, 1859, Halkett, 1848. *The Times*, 7 January 1850. Collinson, R., *Journal of H.M.S. Enterprise, 1850-55*, London, 1889, pp. 316, 370, 416.
- (12) Belcher, E., *The Last of the Arctic Voyages*, London, 1855, Vol. I, pp. 368-9; Vol. II, pp. 3, 32. *Memoirs of Lieutenant J. R. Bellot*, London, 1855, Vol. II, p. 390. Kane, E. K., *Arctic Explorations*, London, 1856, p. 502. McClintock, F. L., *The Voyage of the Fox*, 5th ed., London, 1881, p. 127. Hancock, 1857, pp. 130-133.
- (13) Halkett, 1848. *Illustrated London News*, 6 April 1850, 11 May 1850. Osborn, Sherard, *Stray Leaves from an Arctic Journal*, Edinburgh, 1865, p. 159.

¹ There is a rough sketch of it on a printed notice of the Company in Arctic Expeditions, 1850-1 in the Public Record Office, Ad 7/190/4.

(14) Ad. 53/3570, 4 October 1850; Ad 53/3576, 4 April 1851; Ad 114/13, Osborn, 1865, p. 159. Ad 7/612.

(15) Patent Office, 1853/108, 1853/2649, 1855/2224. *Journal of Royal Geographical Society*, 1856 and 1866. Information from the Rate Books kindly sent to me by the Borough Librarian, Richmond.

(16) Ad 7/190/4. Collins, J., *British Manufacturing Industries*, London, 1876, Vol. vii, p. 94. *Illustrated London News*, 11 May 1850. Snow, William P., *Voyage of the Prince Albert*, London, 1851, pp. 76, 84. Ad 55/54; Ad 53/3577.

(17) Patent Office, 13,645/1851. Berthon, E. L., *Patent Collapsing Life Boat*, Fareham, 1854, pp. 7, 9. Hancock, 1857.

(18) Ad 7/608/85.

A. G. E. JONES

THE HAIFA MARITIME MUSEUM

The Haifa Municipality have recently issued a booklet, Publication No. 1, entitled *Ships of the Mediterranean and the Near East*. This issue, which should be of great interest to model-makers, contains forty photographs of models made in the Haifa Maritime Museum. The Museum was founded some five years ago by the present Director, Lieutenant-Commander Arieh Ben-eli, of the Israel Navy.

G. R. G. WORCESTER

FIRST BRITISH STEEL SAILING SHIPS

The statement of the late Basil Lubbock in his *Last of the Windjammers*, 1927, repeated in the *Mariner's Mirror*, 1957, that the *Altcar* was the first steel sailing ship has been refuted by Mr A. G. Davies in *Sea Breezes*, 1934, and also by Dr John Lyman in *Log Chips*, 1951, which contains a list of the first eighteen vessels. The first three, all ships, were built by Jones, Quiggin and Co., Liverpool, the pioneer being the *Formby* of 1271 tons gross launched 26 November 1863, then came the *Clytemnestra* of 1250 tons launched in April 1864, and the *Altcar* of 1283 tons launched in August of the same year was the third. The *Formby* and *Altcar* were built for C. S. Lemon and Co., and the *Clytemnestra* for Jones, Palmer and Co., both Liverpool firms. The *Formby* was posted as 'missing' after being last spoken in 30° S., 36° E., when bound from Bassein to Liverpool on 10 July 1868, the *Clytemnestra* was wrecked on a reef south of Rodriguez on 4 September 1870 and the *Altcar* in 1899 came under the Peruvian flag and afterwards disappeared from the register.

There were no more until the *Bay of Biscay* was launched by J. and G. Thomson, Glasgow, in 1878. The first barque was the *Kylemore* in 1880 and the first four-masted barque was the *Pinmore* in 1882, both built by Reid and Co., Port Glasgow. There were nine in the latter year including the *Garfield* and *Lord Downshire*, which were both steel with iron floors and beams. There is a photograph in *Sea Breezes* of the *Altcar* as a barque in 1891 but apparently none exists of the *Formby* or of the last British steel sailing vessel, the barque *Rendova*, launched on 26 January 1907, by Napier and Miller for Lever Brothers.

J. W. D. POWELL

CAPTAIN SAMUEL PHILLIPS

The following monumental inscription in Kingston Parish Church, Jamaica, is taken from *Historic Jamaica*, by F. Cundall, 1915:

'commanded the *Alexander*, Private Ship of War, out of Bristol, and cut His Majesty's Ship *Solebay*, out of St. Martin's Road, the 10th of April 1746, for which he had the honour to kiss His Majesties hand and Received a Gold Medal and chain, *Alexander*, 140 men and *Solebay*, 220 men.'

Captain Phillips died in 1757, aged 54.

J. W. D. POWELL

THE TRANSITION FROM PADDLE-WHEEL TO SCREW PROPELLER

With reference to the article under the above title which appeared in your issue, Vol. 44, No. 1, 1958, it might interest your readers to have their attention drawn to an historic model, a boat with screw propellers, constructed and made to work, in 1826, by Robert Wilson of Dunbar, and which has been on exhibition in the shipping section of the Royal Scottish Museum since it was presented to this institution by the then (now Royal) Highland and Agricultural Society of Scotland in the middle of the last century.

The model was made by Robert Wilson in 1826, in an attempt to reproduce the action of sculling by a power-driven mechanical contrivance. Wilson fitted his model with both side paddles and 'stern skulls', as they were then called, and arranged for it to be driven by clockwork. He tried it first with the paddles alone and the sculls removed, then with the sculls alone and the paddles removed. To annul any ill effects upon the steering which might result from the rotation of the sculls, Wilson fitted two of his propellers, as we may now call them, in line and arranged for their rotation to be in opposite directions in the same plane, at right angles to the keel.

The results obtained with the model justified experiment on a larger scale. Wilson, however, was a poor man, but, with the help of the Highland Society of Scotland, he was enabled to fit out a 25 ft. vessel with manually-operated stern propellers. This was taken out beyond the pier at Leith into Leith Roads, where, under conditions of ground-swell, it was found easier to control the boat with its screw propellers than with its side paddles, the latter depending to a larger extent on calm weather for their efficiency.

A full Report by the Society of Arts in Scotland (now the Royal Scottish Society of Arts), with full particulars of the practical experiments carried out in Leith Roads, was sent to the Admiralty together with Wilson's model and the actual propellers used in the test. Also, accompanying the Report, was a recommendation that it be given the consideration of the Lords of the Admiralty signed by Sir John Sinclair, Bart., Admiral Sir David Milne, Sir Thomas Dick Lauder (Solicitor-General) and others.

Their lordships referred the documents to the Officers of Woolwich Dockyard, who reported on the idea as being 'objectionable'; while subsequent protests were treated with complete indifference and neglect.

Discouraged by this rebuff, the noble gentlemen who had supported the enterprise regretfully withdrew their patronage, despairing of any success in view of events. From the Royal Scottish Society of Arts Transactions, papers and correspondence relating to the invention, Wilson drew up a pamphlet which was published by Thomas Murray & Son, in 1880, under the title, *The Screw Propeller: who invented it?*. From this publication one gathers that Wilson 'resolved to wait in the hope that some enterprising shipbuilder might be induced to take up the matter'. But, in view of the Admiralty action, this proved a vain hope.

'All my calculations in regard to the screw', writes Mr Wilson, 'were suddenly superseded on hearing, some time about 1836, that a Mr Smith had not only made the same discovery as myself, but had actually taken out a patent for it.' It would be little consolation to Robert Wilson that 'my Lords' subsequently expended many thousands of pounds of public money in experimenting with what on the face of it was a far inferior design to that which they had formerly rejected without even a trial. *The Scotsman* of 9 June 1860 thought that a case had been made out that warranted further inquiry. To-day, with all the evidence available, including the inventor's original and contemporary model, some recognition at least should be accorded to Robert Wilson, but the way of the 'unknown' inventor is hard and the case of Robert Wilson would appear to be just one more illustration of the fact.

ALEX. R. HUTCHIESON

QUERIES

6. (1958.) DUPUY DE LÔME'S TRIREME. According to Jal a full-size reproduction of a Roman trireme was ordered by Napoleon III, designed by Admiral Dupuy de Lôme, built at Ansières near Paris and tried on the Seine and at Cherbourg. Where can I find specifications, plans and information about the result of this experiment? Has anything been published about it?

FRIEDRICH JORBERG

7. (1958.) SIR CLOUDESLEY SHOVELL. Can any further information be found for the following statement from *Samuel Kelly: An Eighteenth Century Seaman*, 1925, p. 267, in which he refers to Shovell's monument in Westminster Abbey as 'lying in a recumbent posture in white marble and may be known by his dirty face, arising from the juice of tobacco thrown at his face by British tars out of revenge. He having been the first promoter of Burgoo in the Navy, which seamen much dislike.'

J. W. D. POWELL

8. (1958.) ASSYRIAN OARS. In many ancient representations of small craft on the Tigris the oars appear in the remarkable shape shown in the accompanying sketch. Up to now nothing is known about them. Can any reader offer suggestions as to the reason for their shape, the material of which they were made, etc.?

F. JORBERG



Fig. 1

9. (1958.) There is a ship carved in relief on the tomb of King Hardicanute, A.D. 1042, in the south choir of Winchester Cathedral. The design of the ship is obviously not contemporary with the King. It would be interesting to know when it was carved and why.

Besides the well-known ship carved on the marble font, there is another noteworthy vessel depicted on the south wall of the Lady Chapel which dates from about 1500.

G. R. G. WORCESTER

ANSWERS

27. (1957.) SHIPS OF MUSCAT. The *Liverpool* 74, of 1826, was built at Bombay by the East India Company's builders. *The Times* of 17 March 1836 carried an account of how she was presented by the Imaum of Muscat, Seyyid Said bin Sultan, ruler of Muscat and Zanzibar and great-grandfather of the present Sultan of Zanzibar, to King William IV. By the King's express wish she was renamed *Imaum*. This was reprinted in *The Times* in March 1936, and a few days later a correspondent wrote quoting from some notes written by a Captain Hart, on a visit which he paid to Zanzibar in H.M.S. *Imogene* in February 1834. Whether this was quoted from a printed or a manuscript source was not stated. 'We came to anchor off the Imaum's palace alongside of the *Liverpool*, 74 guns, his Highness's flagship, carrying a red flag at the main.' Two days later Seyyid Said visited the *Imogene* and 'as the *Liverpool* was lying close under our stern our attention was called to her. I admired her very much and repeated that I was much struck with her great likeness to the *Melville*. He said she was a very fine ship and built by the English, and nothing

would please him so much as for the English to have her. . . . I thanked him and told him I would faithfully report his munificent offer to my admiral.'

The *Shah Allum* 56, of 1819, survived at Zanzibar until 1872. The *Illustrated London News* of 1 June 1872 printed an account of the hurricane at Zanzibar on 15 April of that year. The Sultan is said to have lost half a dozen ships. They were—the *Sea King*, ex *Shenandoah*, a steamer built in England for the Confederates during the American Civil War; the sailing frigate *Shah Alum* (*sic*); the corvette *Iskandar Shah*; the *Suleiman Shah*; and two steamers, the *Star* and *Sultan*.

MICHAEL R. BOUQUET

For further details of the Imaum of Muscat's ships *Caroline*, *Shah Allum* and *Liverpool*, may I refer Mr Anderson to Wadia's *Bombay Dockyard and the Wadia Master Builders* which contains more detailed information.

The *Liverpool* was laid down as *Imaum* and was presented to King William IV in 1836 when she was renamed H.M.S. *Liverpool*. She was eventually sold out in 1852, having served as a receiving hulk at Jamaica for some years.

The fate of the first two is unknown, but it is safe to assume that they served the Imaum of Muscat for many years. Bearing in mind the swarms of pirates which infested the Eastern seas in those days, the only vessels safe from their attack were heavily armed 'European vessels'.

The *Imaum* was somewhat of an embarrassment and, reading between the lines, there appears to have been a certain amount of suggestion that the vessel was somewhat grandiose and would be better employed in H.M. Navy. Everything was nicely arranged, but the ship never saw action and I cannot trace that she was ever fully commissioned.

N. LISHMAN

21. (1957.) H.M.S. *ACASTA*. In Greek mythology, Acasta was an Oceanid, daughter of Oceanus and Tethys, who were brother and sister. This incestuous mythological couple produced over 3000 ocean nymphs.

EDGAR K. THOMPSON

22 and 23. (1957.) TONNAGE MEASUREMENT. For nearly 200 years tonnage was reckoned by the formula $L \times B \times D/94$ with some variation in the method of taking or calculating the three measurements; this accounts for the constant appearance of 94ths of a ton.

The Act by which a more scientific method of measurement was introduced was passed in 1835.

R. C. ANDERSON

22 and 23. (1957.) TONNAGE MEASUREMENT. I notice that there is no reply in the February issue to the queries raised by Mr K. Rathbone. I enclose herewith the information he requires:

Act of 1773

The length shall be taken on a straight line along the rabbet of the keel of the ship, from the back of the main stern-post to a perpendicular line from the fore part of the main stem under the bowsprit, from which subtracting three-fifths of the breadth, the remainder shall be esteemed the just length of the keel to find the tonnage; and the breadth shall be taken from the outside of the outside plank in the broadest place of the ship, be it either above or below the main wales, exclusive of all manner of doubling planks that may be wrought on the side of the ship; then multiplying the length of the keel by the breadth so taken, and the product by half the breadth and dividing the whole by ninety-four, the quotient shall be deemed the true contents of the tonnage.

Parliament also divided the interest in every British ship into sixty-four parts, and required every owner of a part to be registered as a part-owner of the ship.

From 1628

Tonnage was estimated from the length of the keel, leaving out the false post, the greatest breadth within the plank, the depth from that breadth to the upper edge of the keel, and then to multiply these and divide the result by one hundred.

Prior to this date tonnage was reckoned by the capacity for storing so many tuns of wine, a barrel measuring 42 cubic feet. Barrels being circular, they could not be packed close together, so tonnage was really greater than that given.

1773 Act Formula. Burthen in tons = length of keel for tonnage \times breadth for tonnage \times $\frac{1}{2}$ breadth for tonnage, divided by 94. The length between the perpendiculars for tonnage was taken at the height of the upper deck in two-decked ships of war, frigates, single-decked vessels and merchant ships, middle deck of three-decked vessels. The after extreme was at the back of the main post at the height of the wing transom in square-sterned ships, and in ships with elliptical sterns, where the same height of the upper deck of two deck ships, etc., or the middle deck of three-decked ships, cuts the line of the counter, these points to be squared down to the line of the lower edge of the rabbet of the keel produced, the distance between these intersections is 'length between the perpendiculars for tonnage'.

This length makes no allowance for the rake of stem and stern post, but to meet this a deduction for rake of stem is obtained by taking three-fifths of the breadth for tonnage, while rake for stern post has allowance of $2\frac{1}{2}$ in. for every foot that the upper side of wing transom at the middle line, in square-sterned ships, is above the lower edge of the rabbet of the keel, or the same ratio per foot in ships with elliptical sterns, for the height of the intersection of the counter line with the back of the main post above the same base, and the sum of these two estimated deductions is to be taken from the 'length between the perpendiculars for tonnage', to give the 'length of the keel' for tonnage.

This rule came into force when the practice of raking stern posts was introduced, in early days the post was vertical.

BREADTH FOR TONNAGE. Obtained by subtracting from the extreme breadth of the ship, at the height of the wales, the excess in thicknesses of the wales over the thickness of the plank at the bottom. Thus a ship 60 ft. breadth from outside to outside of wales, with wales 10 in. thick and bottom plank 5 in. the excess of the wales in thickness over that of the bottom plank would be 5 in. on each side, which gives 10 in. to be deducted from the extreme breadth of 60 ft., so that 'breadth for tonnage' would be 59 ft. 2 in.

This rule was manifestly absurd as no account was taken of **DEPTH**, so that two ships of same length and breadth, but one say double the depth of the other, had nearly the same nominal tonnage, in fact the deeper ship was the lesser one in tonnage from the greater height of the wing transom above the lower edge of the rabbet of the keel, causing a larger deduction to be made for ascertaining 'keel for tonnage' and thus a less length. This rule produced merchant ships like square deep boxes, with ends rounded off for steerage, and horrible lines.

In schooners, cutters and open boats, the 'length between the perpendiculars for tonnage', is taken from where the line of the lower edge of the rabbet of the keel is intersected forward by the squaring down of the foreside of the stem at the bed of the bowsprit, and measuring the length from this point to where the lower edge of the rabbet of keel, if produced, would cut the aft side of the main post, the deduction from this length for the 'length of tonnage' being only that arising from taking three-fifths of the breadth for tonnage for rake of stem, the rake of stern post being considered as accounted for by the above measurement, the rest of the rule the same as for other ships.

This method of measuring tonnage was known as **OLD MEASUREMENT** when the **NEW MEASUREMENT** was enacted by Acts of Parliament of the fifth and sixth years of the reign of William IV.

DEPTH FOR TONNAGE. The length of the upper deck, or of the upper part of the hold intended for stowage of goods, be measured at that height from the after part of the stem to the fore side of stern post, and such length be divided into six equal parts, and that at the foremost, middle and aftermost points of division thus fixed, the depths from such points of division to the ceiling or internal planking at the inner edge of the limber strake, or the edge nearest to the middle line, be measured in feet and decimal parts of a foot, the dimensions thus taken are denoted 'depths'. Should there be a break in the deck, or should the deck not be continued fore and aft the vessel, these depths are to be measured from a line stretched along as a continuation of the deck.

BREADTHS FOR TONNAGE. Divide the depths at each of the three stations into five equal parts and

at these divisions of the depths measure the BREADTHS of the internal form or inside of the ship on lines squared across the ship at the points or positions of the several depths that follow:

Foremost station when divided into fifths in the depth, at one-fifth and four-fifths from the upper deck.

Middle station at two-fifths and four-fifths from upper deck.

Aftermost station at one-fifth and four-fifths from upper deck.

LENGTH FOR TONNAGE. For the dimension to be used as length, it is enacted, that such length be taken at the height of the middle of the midship depth, on a line parallel with the upper deck, and in length from the after part of the stem to the fore part of the sternpost. These dimensions of depth, breadth, and length being thus taken, they are to be prepared for use by the following enacted regulations.

DEPTH. To twice the depth at the midship division, add the depths at the foremost and aftermost divisions, which call the sum of the depths.

BREADTHS. Of those taken from the foremost section, add together the breadths taken at the one-fifth and four-fifth divisions of the depth of that division.

Of those taken from the middle section, add together three times the breadth of two-fifths, and once the breadth at the four-fifth division of the depth of that division.

Of those taken at the aftermost section, add together once the breadth at one-fifth and twice the breadth at the four-fifth division of the depth at that division.

The sum of these multiples of the breadths will give the sum of the breadths for tonnage.

THEN TONNAGE = sum of depths \times sum of breadths \times length for tonnage, divided by 3500.

EDGAR J. MARCH

22. (1957.) TONNAGE MEASUREMENT. There is no doubt that from the very earliest times various, though generally similar, methods of assessing dues were in force at different ports and in different trades. Gradually the formula took shape in which the weight of cargo was subtracted from the load displacement of the vessel, thus giving the tonnage burthen.

The first reference to tonnage measurement was in an Act of Parliament in 1422, and applied to keels carrying coal at Newcastle. In 1660 there was an extension of the regulations for measurement of keels and other boats for tonnage.

The first act of Parliament relating to the tonnage measurement of ships was passed in 1694, and by 1773 the regulations were extended to apply to all ships and, in its then present form, was known as the Builders' Measurement. These measurement rules have been the butt of very much criticism, but while they were applied by the Thames shipbuilders to their own vessels which were all very similar in shape and build, they gave a fair estimate of the carrying capacity of their ships. It was quite another matter when competition set in from the provincial ports.

In about the year 1678, shipbuilders on the Thames calculated the deadweight of cargo in terms of the vessel's principal dimensions, i.e.

$$\frac{L \times B \times D \times 0.62}{35} = \text{tons displacement},$$

in which 0.62 represents the coefficient of fineness and the weight of water is taken as 35 cu. ft. per ton. It was considered a fair estimate that the hull and equipment represented two-fifths of the weight and three-fifths remained for the cargo.

The draught of a ship was always taken as approximately half the beam and so we arrive at the formula

$$\frac{L \times B \times \frac{1}{2}B \times 0.62}{35} = \text{tons displacement}.$$

Now, as the cargo represents three-fifths of the total displacement, we can simplify the process thus:

$$\frac{3}{5} \times \frac{0.62}{35} = \frac{1.86}{175} = \frac{1}{94}.$$

Hence we get

$$\frac{L \times B \times \frac{1}{2}B}{94} = \text{tons burthen.}$$

Tons burthen must not be confused with the registered tonnage rule which was enacted during the reign of William IV and which is the one shown in Register Books, etc., of the period and which is arrived at as follows:

$$\frac{L \times B \times D}{130} = \text{registered tonnage,}$$

where L = length under deck from afterside of stem to foreside of stern;

B = beam on upper deck from skin to skin under deck;

D = depth from underside of upper deck to pump well bottom.

The 1835 requirements for measuring a ship are too long to quote here, but may be found in most encyclopaedias and text-books of the period or may be looked up under Anno Quinto & Sexto Guilieme IV Regis, Cap LVI: An act to regulate the Admeasurement of the Tonnage and Burthen of the Merchant Shipping of the United Kingdom, 9th Sept. 1835.

This rule requires the ship to be divided into a number of sections or stations and ordinates taken from which the gross tonnage is calculated much as at present.

G. W. MUNRO

REVIEWS

BRITISH BATTLESHIPS: *WARRIOR* 1860 TO *VANGUARD* 1950. A HISTORY OF DESIGN, CONSTRUCTION AND ARMAMENT. By OSCAR PARKES. Foreword by Admiral of the Fleet the EARL MOUNTBATTEN. Seeley Service. $11\frac{1}{2} \times 9$ inches; 700 pages, 450 plans and photographs. £6. 6s. od. net.

Of recent months, the *Vanguard* has often been moored at Portsmouth within a few hundred yards of the *Victory*, so that, for those with a sense of the continuity of history, the whole era of the ship-of-the-line can be spanned, as it were, at a glance. For nothing is clearer, even from a first perusal of Dr Parkes's consummate history of the battleship, than the pain, even the torture, with which the 'shape of things to come' gradually departed from that of immemorial tradition.

In fact, with the advent of steam and armour, the entire problem of the future battleship should have been studied afresh, without regard to conservative methods: but that is not, as a rule, the way things happen, except with such truly new types of vessel as the submarine and the aircraft carrier, types in which surface fighting is at best secondary. So it was that the battleship grew, sometimes slowly, sometimes with spurts and jerks, and once, in the case of the *Dreadnought*, with a burst which broke with most, though not quite all, that had gone before.

Dr Parkes's full title is to be noted: but together with his history of the evolution of the powered battleship, he has included an account of the Admiralty decisions which lay behind each phase of progress: difficulties, wrangles, tragedies, all are faithfully, if sometimes briefly, recorded, with the personal factor always in proper evidence, and nothing essential (the foreign developments, for example) left out. But plans, designs, specifications, arguments are nothing without the visual record: and Dr Parkes's photographs are not merely evocative, as is often the case with books of the kind, they are outstanding. Anyone who has ever served in a battleship will value this book, and Dr Parkes is so responsive to beauty of line that he can make even the layman see just where the virtue of any particular vessel or class lay.

With the *Vanguard*, completed after the Second World War, the day of the battleship as the capital unit of the fleet ceased for good. The history of the type, though chequered, is glorious, and

must be of continuing interest, as showing man's skill pitted against recurrent though swift-changing problems. And by including the war service of every vessel, this book is in effect a miniature history of the Royal Navy in the later nineteenth and the earlier part of the present century.

Only those who have given as long a study to one particular subject as has Dr Parkes are fully entitled to dispute his conclusions, which are always fairly based on evidence. In the future, those who would discover in all its exciting detail the story of one of the most costly and awe-inspiring creations of man's hand and brain will need to turn to this rich store of technical learning, so superbly illustrated, and so adequately arranged. They will not be disappointed, for Dr Parkes is an enthusiast who writes with a pleasure he can transmit. *O si sic omnes!*

OLIVER WARNER

THE HISTORY OF THE BRITISH NAVY. By MICHAEL LEWIS. Penguin Books, Harmondsworth, Middlesex. 1957. Price 3s. 6d.

Our debt to Sir Allen Lane, that modern Aldus, grows steadily greater. Every year new works of popular scholarship, in the proper sense of that term, appear as Pelican Books; and indeed that admirable series has, in itself, invalidated many of the criticisms levelled at the division between research and popular writing. The success of the venture, in encouraging scholars of note to synthesize for a wide audience and in ensuring that such an audience exists, has turned on the publisher's faculty for picking the right man for the job; and it is entirely fitting that, for his new *History of the British Navy*, he should have gained the services of Professor Lewis.

It can be said at once that the result is excellent. There has been no satisfactory brief and handy introduction to British naval history for a long time. Such attempts as there have been in the past have indeed mostly proved inadequate, and the best of them, David Hannay's *Short History of the Royal Navy* of 1898-1909, is not only in two volumes but has long been largely out of date. Other of the older standard works are too lengthy or too superficial, and again are partly out of date both in their facts and in their approach; while the more recent of the general contributions, which have set naval history in a wider setting, have concerned themselves mainly with one or more aspects of it. Some of them—notably Sir Herbert Richmond's classic *Statesmen and Sea Power*, Professor Lloyd's *The Nation and the Navy*, and Professor Lewis's own *The Navy of Britain*—provide admirable 'intermediate' works for the non-specialist reader, combining some original research with a balanced survey of a large field. But none aims precisely at the object for which a Pelican history is designed; none is likely to reach so many readers; and we may be very thankful that the gap has now been filled so satisfactorily by Professor Lewis.

His treatment is familiar from his larger work. He seeks to show, as he puts it in his Introduction,

- (1) What [the Navy] is, and how it came to be so.
- (2) What it did, and why.

We are, in fact, offered an articulated history, in which policy (involving a scrutiny of the national position and aims) and administration (involving a scrutiny of the state of the navy in relation—where possible—to that of the country) are related at every turn. The development of strategy and of tactics fall into place within this comprehensive scheme, in which the navy is seen, continuously and in depth, as a factor and a part of the national life.

Such a treatment leads Professor Lewis to divide the story into three parts: 'The Old Navy', from medieval times in 1660; 'The Royal Navy', from that date to the end of the Napoleonic War; and 'The New Navy', embracing the Pax Britannica and the two World Wars. The principle determining these divisions is the kind of Naval Service required, and capable of being found, in the conditions of the day—required by policy, and capable of being found by administration. The character of the navy is thus seen as both a reflexion and a determinant of the needs of Government, and the relation of the trained, permanent nucleus—the 'Navy Royal', or 'Royal Navy'—to the mercantile whole—the 'Navy of Britain'—can be traced logically and comprehensively.

In telling his great story, Professor Lewis maintains an enviable sense of proportion. As in

other works of this nature, perhaps only the specialist can judge the way in which the author sees the wood without losing sight of the trees, and the extent to which the findings of diverse pieces of research have been incorporated and assessed. But all can appreciate the story as a story, and the ease, clarity and balance of its telling. To my own taste, the style seems too often self-consciously colloquial, and at times indeed to verge on the jaunty. But this does not affect the substance of the book, and Professor Lewis, moreover, can command the telling phrase—for instance, speaking of the claims made for various medieval monarchs as fathers of the navy, 'The Royal Navy was *not* founded in bankruptcy'; of the French challenge in the later seventeenth century, 'There was something almost hypnotic about the Grand Monarque's self-assurance; he made even the Royal Navy feel uncertain of itself. . . .'; of the average text-book's neglect of the navy's contribution to Wolfe's victory at Quebec, it is too often 'Wolfe alone who "sailed up the St Lawrence", "crossed the Middle River", "forced the Narrows", . . . for all the world as though he and his gallant men were a school of water-beetles'; of the favourable treatment accorded to Graves after Chesapeake Bay, 'And why not? . . . He had lost no engagement, no ships. . . . He had merely lost America'.

Inevitably in a work of this comprehensive nature, the reviewer will question some points. I am not sure that it is helpful to describe Lord Howard of Effingham at the time of the Armada, in his capacity as Lord Admiral, as 'in many ways "an R.N. officer", even in our modern sense' (p. 61); or the officers and men of the early Stuart navy as '(again in modern terms) wholly R.N.R. and R.N.V.R.' (pp. 71-2). The meaning and the intention are clear, but they could perhaps be conveyed equally clearly without recourse to 'a terminological inexactitude'. There have surely been three 'invasions' of the country since 1485, in the sense defined on p. 26, and not two as stated there: William III's, Prince Charles Edward's—and the French landing at Fishguard in 1797? The remarks about the depredations of the Barbary seamen in the earlier part of the seventeenth century (p. 74) may need to be qualified by those of Sir Godfrey Fisher in Appendix H of his recent *Barbary Legend* (published within a few weeks of Professor Lewis's own book). It is possibly an exaggeration to claim for Pepys (as Sir Arthur Bryant has also claimed) the chronological title of 'first Civil Servant of all' (p. 110). He came of a generation of competent administrators, of whom Downing and perhaps Henry Guy, to take two examples, may well have been considered of equal eminence between the 'sixties and 'nineties. I am not sure if it is quite true to say (p. 194) that before 1805 'the non-combatant civilian in enemy territory was perfectly safe from molestation'. Article 2 of the Anglo-French Commercial Treaty of 1786, by which such persons were guaranteed their safety 'so long as they. . . . commit no offence against the laws and ordinances' of the country in which they were residing, was said at any rate by one authority at the time to have introduced a new principle. The contrast drawn (p. 244) between the need of imports for war equipment in the First World War and its virtual absence in the Napoleonic War, and even in the War of the Spanish Succession, seems perhaps too sharp. And the remarks on the satisfactory conclusion to the well-known quarrel between the Navy and the R.A.F. in the 1930's, on the control of aircraft for sea operations, might have drawn attention to the length of the dispute and the damage it had caused.

But these are not large points; some at least are disputable; and they certainly do not detract from the merits of the work. Professor Lewis's book serves, and will serve for a long time, as the natural introduction to British naval history. This being so, we can say that its very merits point the limits to our present knowledge of the subject. For the fact that this little volume incorporates so admirably the results of past research enables us to see, more easily than might otherwise be the case, the gaps that still exist. If indeed we look carefully at the structure of the narrative, we can see how its emphasis shifts to some extent in accordance with what is known and has been published. As Professor Lewis himself points out in his bibliography, naval administration in the eighteenth and much of the nineteenth centuries has still to be studied. So have naval finance; the activities of naval officers in politics, and the exact effects upon the service; the relations between maritime war, trade and the trading interests (apart from the periods and aspects studied by Sir George Clark and by Professor Pares); and even the conduct of some of the wars themselves from the centre of government, along the lines of Professor Wernham's and Mr Stone's investiga-

tions of some of the sixteenth-century expeditions, and Mr Mackesy's of Mediterranean strategy for part of the Napoleonic War. Naval history, in the broad sense in which Professor Lewis has defined it, still needs much study, by scholars approaching it from various directions and through various disciplines. Meanwhile, his summing-up of the evidence as it stands, and the perspective in which he has set it, are not the least of the debts which we in this Society, as well as the reading and teaching world beyond, owe to our Chairman.

JOHN EHRMAN

BOAT TRAINS AND CHANNEL PACKETS. By RIXON BUCKNALL. London: Vincent Stuart Limited. 1957. $7\frac{1}{2} \times 10$ inches, with many illustrations. Price 55s. net.

This is a very well-produced and well-printed work by an expert and erudite author. It is best to say from the very outset, however, that it contains some appalling sketch-maps which might easily have been drawn by a child of six; in each case the land is white and the sea dark, so that one has to look twice before realising which is which; to make matters worse, 'Fig.' numbers are allotted indiscriminately to these textual sketches and the photographs at the end of the book, necessitating having to keep turning backwards and forwards. This said, there is nothing but praise to be accorded to the remainder. The main theme is the harbours of Dover and Folkestone, and the work would be most valuable if it were solely for the purely historical account of the rise of these two places. It may seem strange that these are practically the only cross-channel ports dealt with, when presumably Harwich and Newhaven might be considered to qualify under the heading. These other two are hardly mentioned and there is no reference to them in the excellent index. On the other hand, we are told something of those fascinating paddle-steamers of the Zeeland Shipping Company that plied between Queenborough and Flushing from 1876 to 1911, and were familiar to men-of-war lying at Sheerness during those years.

At first sight this appears to be a quasi-railway book, but although there is plenty here to interest railway fans, especially in the stories of the old South Eastern, and London, Chatham and Dover Companies, the emphasis is on the sea, and it can therefore be thoroughly recommended to nautical research readers. There is a collection of upwards of eighty photographs at the end, mostly of Dover and Folkestone harbour scenes spanning more than 160 years, and including pictures of 'A' class submarines in Granville Dock in 1909, and Atlantic Fleet battleships likewise at Dover. The Admiralty certainly made some attempt to give Dover Harbour a fair chance, and part of the fleet spent Christmas of 1911 there. The *Formidable* (in which your reviewer was serving), rapidly gyrated round her buoy without ceasing, first clockwise and then anti-clockwise. The experiment was not persisted in.

H. P. MEAD

THE MERCHANT SCHOONERS (Vol. II). By BASIL GREENHILL. Published by Percival Marshall and Co. Ltd., London. 1957. 6×9 inches, 180 pages; many illustrations. Price 30s.

We who delight in reading of the smaller merchant sailing craft of our coasts have waited all too long for Greenhill's second volume, but with a text dated 'London, 1950' and an Author's Note dated 'Tokyo, 1956', it is not difficult to realize that in between there has been a busy period in remote places. That this period was not entirely taken up with the business of Commonwealth Relations, readers of the *M.M.* will be well aware.

In *The Merchant Schooners* the author set out to trace the history of the small fore-and-aft rigged merchant sailing vessels of England and Wales in the period from about 1870. In this difficult task he has succeeded admirably, with an objective and detailed, yet readable, style throughout. He has at times had to include history and description of larger square-rigged vessels and, for a few pages, go to the Baltic, but these excursions are not as irrelevant as may seem. History being made up of a multitude of happenings and parallel developments, which the all too

common arm-chair historian is apt to dismiss as parochial, so Greenhill has dealt separately with the various coastal areas, as well as discuss the overall picture. In Volume 1 we came down the Irish Sea into the Bristol Channel, right up to Gloucester, and on to Cornwall and South Devon. In the present volume, camouflaged under the heading 'The Coal Trade', we have similarly effective treatment of the coast from Dorset eastwards and northabout to Yorkshire. The last word has yet to be said about the coastal craft of much of our seaboard, and certainly Greenhill did not set out to deal exhaustively with districts, but he gives enough to form the backbone of some brilliant chapters on the development of design, the management and economics of the schooners and ketches. Finally, his analytical approach excels in this explanation of the shrinkage of the coastal sailing fleet. One might have expected it to be a gradual fading, but in fact it happened spasmodically in three or four well-defined periods of war and want. There follows an account of the rise of auxiliary engine conversions, the building of new vessels with auxiliary motors, and the inevitable conclusion, the building of new vessels with auxiliary sails, a process in which Scandinavia and the Netherlands played a great part. A discussion of sail training for young men and of the future of the small ports complete the text itself. There is, as an Appendix, a long autobiographical note by Captain Robinson which has the authentic salt tang and is a very microcosm of schooner life and economics from the point of view of the man in the midst of them.

The publishers having long specialized in books for model makers are better acquainted with the value of illustrations than the average purse-conscious house. We have a galaxy of plans, drawings, and plates of vessels and parts of vessels which are never less than instructive. It is a pity, however, that page references were not added to the 'List of Plates' and indeed, that the text-figures were not listed also, for this book will long be used as a work of reference. But in that, if my own experience is normal, the author has little to say, and the real meat of the book, into which a tremendous amount of spade-work has gone, carries my wholehearted recommendation.

GRAHAME FARR

SOUVENIRS DE MARINE (reprint). Burg b. Magdeburg (ROBERT LEOF). 1957. 12 x 8½ inches, 6 pages text, 26 plates. Price 14s. Obtainable through Messrs Francis Edwards, Ltd.

The six volumes of *Souvenirs de Marine* contain in their 360 plates a series of plans, nearly all reliable, of ships of many nations and of widely differing dates. The collection is extremely useful, but unfortunately expensive, hard to find and hard to accommodate. Now the German firm of Loef, who recently gave us a reduced reprint of Chapman's *Architectura Navalis Mercatoria*, have produced a first selection of twenty-six plates similarly reduced from the great French work. Actually those in this first instalment are taken only from the first five volumes and the title-page, giving the dates 1882–92, ignores the fact that a sixth volume appeared in 1908. That is, however, a very small point which can easily be put right later on.

The original plates measure about 20 by 16 in. and those of the reproduction roughly half these figures. Detail has been preserved surprisingly well, and though a magnifying glass is needed for some of the explanatory inscriptions, a model-maker could easily work from these smaller plans. Probably no two people would agree as to the best selection of twenty-six plates and we are certainly given a wide choice of subject, but it will probably be admitted that it was a mistake to devote two pages to the model of the *Couronne* of 1636, one of Admiral Pâris's less successful attempts at 'reconstruction'. A few notes by way of correction would also have been useful; for instance, the 'Royal Louis c. 1690' is now known to be the model of an imaginary ship and to have been made some 35 years later; while the *Protecteur* does not belong to 1793/4, but to 1760.

These are small points, too small to detract from the usefulness of this new publication. Anyone who wishes to make use of *Souvenirs de Marine* and has not access to the original can be recommended to take what is now offered in the hope that in due course the whole collection of plates will also be reproduced.

R. C. ANDERSON

BRITISH BATTLESHIPS 1892-1957. By Commander RAYMOND PEARS, Royal Navy. Putnam and Co. 1957. Price 42s.

This handsome volume is dedicated to the memory of the author's father, Admiral Sir Edmund Pears. On the passing of the battleship, says the author, 'it seems fitting that tribute should be paid to the capital ships which were the backbone of our naval strength, and to the men who manned them'. Interspersed between the descriptions and histories of the ships there are brief accounts of the entry, training, manners and customs of the officers and men who manned them, and of the services they performed in peace and war.

In popular style, the book recalls memories of the 'Navy and Army Illustrated'. Part I leads up to the building of the *Dreadnought*; Part II deals with the Grand Fleet; Part III with the changing world ending with the last and greatest of our battleships, the *Vanguard*. There is a short account of some of the famous battleships of history; and a postscript ends with the words which give the key to the book: 'Whatever the future may hold, one thing is certain: if the essentials of loyalty, a disciplined mind, a sense of duty and a pride in a great Service continue as of old, the Royal Navy will still maintain its unique prestige among the navies of the world.'

Commander Pears has given us a good and readable record of the last phase of the ship-of-the-line. A deeper study of the period, which would have taken years, would, I believe, have shown him that he was a bit off the mark in saying that the Admirals of the Victorian era could not study the art of naval warfare, because there were no formal courses of instruction.

There are a few minor inaccuracies. For example, carvel-built galleys and Montagu whalers came in about 1905, and the rig of the former was not lateen but dipping lug. A. H. TAYLOR

A TREATISE ON SHIPBUILDING AND A TREATISE ON RIGGING, WRITTEN ABOUT 1620-1625. Edited by W. SALISBURY and R. C. ANDERSON. S.N.R. Occasional Publications No. 6. $8 \times 5\frac{1}{2}$ inches, 63 pages, plans. Price to members, 12s.

It is heartening to see the Society's *Occasional Publication No. 1* which Dr R. C. Anderson edited thirty-six years ago, reprinted with Mr William Salisbury's transcript of the *Treatise on Shipbuilding* from the Admiralty Library. Together they make a nearly complete description of an early seventeenth-century ship. Nobody would pretend that this combination is likely to become a best seller or even a pamphlet suitable for family reading. For instance, here cut straight from the *Treatise on Rigging*: 'Cattharpings they are six of every side and everyone fastened to a shroud they passe through a deadmans eye with three holes in it on every side and so going in two parts make six to the ende of every deadmans eye is fastened a blocke, to the end of which the standing part of the falle is made fast, the other ende of it passeth through the other blocke and thence goeth through the blocke it is fastened unto and so is belayed to the necke of the blocke.'

No thoughtful mother is going to read anything like that to her children just before they go to bed. There is the awkward juxtaposition of neck and block and the reference to shrouds which might, at the wrong hour, recall to some tender-hearted little girl the sad story of the beheading of Mary Queen of Scots and many another bloody occurrence in Elizabethan England. And then: A dead man's eye is terrifying enough, but one with three holes in it would give fearful dreams even to a hardened young ruffian brought up on 'Westerns' and all the other horrors of television. No, the Society's publications are not suitable for infant reading at bedtime.

Nor at first sight is the ordinary reader, whose researches hitherto have been elsewhere than on shipboard, likely to find the quotation entirely free from obscurity. But surely he will in the end disentangle the blocks, falls, necks, deadman's eyes and all, and buy a second copy of *Occasional Publication No. 6* for presentation to that fellow traveller who sits ever doing crossword puzzles. He might be broken of the habit, to become a useful member of the Society.

As the first edition of the *Treatise on Rigging* has been useful to the student, confirming what was true in the pictures and condemning the fanciful, so now he is presented with an intimate view of the shipwright's work, and an early attempt to harness higher mathematics to what another seventeenth-century writer called 'The Jewel of Arts'. Mr Salisbury claims that the Admiralty manuscript in its completeness compares with Deane's *Doctrine of Naval Architecture*. It certainly is in style very different from those preceding it. Here is a quotation from a manuscript of perhaps twenty years earlier: 'To know the length of the mainmast of anie ship: ad the depth to the breadth, dooble the sume & devide at by 3 and the quotient is the length of the mast abating so manie feet as the breadth is above 20.' (P.R.O. SP 9/24). That savours slightly of the cookery book, with a memory too of a nursery rhyme. The writer of the *Treatise on Shipbuilding* had nought else in his mind but to explain the building of a ship.

In his sober introduction to this very valuable document Mr Salisbury reminds us of Carr-Laughton's description of it as 'anonymous, undated, incomplete and even without a title', and he hopes that by discussion in *The Mariner's Mirror*, the author's name, the date of *The Treatise* and the purpose for which it was written, may be discovered.

One does not wish to anticipate these discussions, but Mr Salisbury's warning that the work may not all have been written at one time, should always be borne in mind. Perrin, in his introduction to *Boteler's Dialogues*, tells us of several alterations made by the author between 1634 which is the earliest, and 1643 the last manuscript. The Royal Commission of 1618 decided that all men-of-war were to be built with flush decks. While in 1620 Henry Mainwaring agreed that men-of-war were best without falls, he thought merchant ships had best retain them. Although the author of the *Treatise* wrote much of men-of-war is it possible that he thought more of Indians, and did he write for the enlightenment of his Directors?

GREGORY ROBINSON

MARITIME AND NAVAL HISTORY: AN ANNOTATED BIBLIOGRAPHY. By R. G. ALBION. Revised edition. The Marine Historical Association, Mystic, Connecticut. 1955. $8\frac{3}{4} \times 11$ inches; 94 pages. Price not stated.

This is a revised edition of an 'informal' bibliography first issued in 1951. Prepared mainly for the use of graduate and undergraduate courses in 'Oceanic' history at Harvard, it is duplicated, not printed, 'so that it can be available at a much lower price'. The price does not in fact appear on the copy now before the reviewer.

Professor Albion's principal divisions of subject are: Reference Works; books on Ships and Men; Maritime Sciences, Exploration and Colonization; Commerce and Shipping; Navies, and Special Topics. All have appropriate subsections, and there is an Index of Authors covering about 1800 entries, which are in many cases cross-referenced. It is, in fact, a thoroughly comprehensive work from an authoritative source, and has items both to cheer and to dispirit. It is, for instance, sad to note no more recent British maritime bibliography of the kind prepared by the late G. E. Manwaring in 1930, but encouraging to read the compiler's opinion that 'the regular officers of the United States Navy still lag far behind those of the Royal Navy as historians'.

A bibliography without annotations lacks savour, and there is plenty of spice about the present example. For instance, while paying due respect to what was of value in the work of the late E. Keble Chatterton, Professor Albion says in his Foreword that he 'ground out more than forty books in thirty-five years', while criticism is applied to a whole school of what has been called 'yo-heave-ho' writers. Other items of interest relate to *The United States and World Sea Power*, 1955. 'Its 963 pages', remarks the compiler, 'show an encouraging realisation, rare in American naval history but long quite general in England, that there is much more to naval history than simply the occasional shooting': and his comment on Augustus Hervey's *Journal*, 1953 (that it 'gives vivid tactical details of the "wife in every port" aspect of naval life') will cause a delighted chuckle from every reader who has enjoyed that very Boswellian work.

By a curious slip, Professor Albion has given a knighthood to John Clerk of Eldin. This would have pleased him, as would the remark that 'his ideas were so sound that Nelson is said to have

slept with a copy under his pillow'. It would be interesting to know if there is any good authority for this. It is known that Nelson valued Clerk more than most of his fellow admirals, but did he cherish the ingenious Scot as much as all that?

Specialists are bound to spot gaps, perhaps serious ones, in any particular province, and the compiler would admit them. But the work was eminently worth doing, and bears the stamp of an acute mind. It is of value in the general field, and will cause sharp regret that there is nothing on the same scale regularly produced in the country of which Professor Albion says such generous words.

OLIVER WARNER

ÅSS OCH BEITI-ÅSS. By HAROLD ÅKERLUND. Off-print from Unda Maris, Gothenburg. 10 x 7 inches. 1956. Price not stated.

Mr Åkerlund's book on the ships and boats unearthed (literally so) in the old harbour of Kalmar, and two short articles on the Galtabäck boat from the other side of Sweden, were noticed briefly in 1951 (p. 340). He has now turned to problems concerned with the rig and handling of Viking ships, and in particular with the 'beiti-åss', presumably the same as the Norman-French 'betas' mentioned in 1914 (pp. 193 and 250). Magnusson, as there quoted, believed this to have been a yard or boom at the foot of the sail, but Åkerlund makes it a spar used either as a substitute for a bowline, the Cornish 'vargord' (*M.M.*, 1911, p. 185), or, later, as a bowsprit, to which actual bowlines could be led, and certainly makes a good case for this interpretation.

With regard to what look like multiple sheets fitted to bridles all along the foot of the sail in many early Swedish representations of ships he is less convincing. He takes them as brails, used as a substitute for reefing, and the arrangement he suggests would certainly work, but it does not look very like what the carvings show. This is perhaps no more than a personal opinion; others may feel that his ideas are sound here also.

R. C. ANDERSON

DAS MODELL 'ROYAL GEORGE' IN... HANNOVER. By FRIEDRICH JORBERG and HORST ANDERS. In 'SCHIFF UND HAFEN', Hamburg, November 1955. 11 1/2 x 8 1/2 inches. 7 pages; 11 illustrations. Price not stated.

The very fine model of an English three-decker belonging to the Technical High School of Hanover is well known from photographs in several books on models (Nance, Bowen, Köster, etc.). It is known that it was given by the Prince of Wales to Göttingen University in 1744, but there has been much dispute as to what ship it represents, the three suggested being the *Royal George* of 1715, the *Victory* of 1737 and the *Royal George* of 1756! The reason for this last remarkable identification must be the close resemblance between the model and the plate in Charnock's *History of Naval Architecture*, but Charnock was most unreliable in the matter of illustrations and it was pointed out in the *M.M.* as long ago as 1913 that he must have made a mistake in this case. His plate represents the ship of 1715, not that of 1756.

Mr Jorberg, who deals with the question of identification, proves beyond a doubt that the model is that of the ship of 1715, giving photographs of the ship's draught, of Baston's well-known print and of Charnock's plate for comparison with the model. He also tries—very nearly successfully—to unravel the complications caused by renamings and rebuildings at the beginning of the reign of George I. Not quite successfully, because he forgets that the *Victory* lost in 1744 was not the ship of 1695 (the rebuilt *Royal James*), but had been built in 1737, her predecessor having been burnt in 1721. He can, however, hardly be blamed, since even this was called a rebuilding. Another small point is that he makes the *Victory* retain her temporary name of *Royal George*, given in August 1714, only until June 1715, but at the same time makes the former *Queen* take over that name in September 1714. Actually both ships were renamed, according to Sergison's lists, on 9 September 1715; the *Victory* reverted to her former name and the *Queen* became the *Royal George*. It is possible that the mistakes occurred in notes supplied by me to Mr Jorberg; if so, I can only apologize.

Mr Anders describes the work done by him to the model and mentions the rather surprising fact that it had been previously overhauled by Captain Brandt at Detmold in 1942-3. Unfortunately, it suffered a good deal of damage on its way back to Hanover and while stored in the cellars there. Now it has been restored as far as possible to its original state and should last for many years, though its rigging will not stand much moving about. It would be well worth while to make such a detailed study of it as was fortunately made of the splendid seventeenth-century model in Berlin by Mr Winter before it was destroyed.

R. C. ANDERSON

SURVEYS OF THE SEAS. A BRIEF HISTORY OF BRITISH HYDROGRAPHY. By MARY BLEWITT. Foreword by Vice-Admiral Sir Archibald Day. Appendix on ships and instruments by Lieut-Commander G. P. B. Naish. London: MacGibbon & Kee. 1957. 15 x 10 inches. 168 pages; 69 illus. £11. 11s.

In spite of its sub-title, this finely produced volume is (as the author explains in her preface) primarily a picture-book. The splendid collection of manuscript charts preserved in the Hydrographic Department of the Admiralty is familiar to those students and specialists who have, by the goodwill of the Hydrographer and his staff, enjoyed access to it. It is little known to others, and Miss Blewitt has planned her book with the generous intention of setting before a larger public a representative selection of these charts to illustrate (in Admiral Day's words) 'the major contribution made to [hydrography] by British seamen and surveyors'.

The nucleus of the book consists of 64 pages of illustrations, which reproduce 69 charts or views, ranging in date from 1670 to 1932 and derived from surveys in every continent and ocean. All but seven are in the possession of the Admiralty. While admitting that her selection is 'entirely personal', Miss Blewitt has shown sound judgment in choosing her subjects, or details from them (for she is careful not to over-reduce), and her book provides an important *corpus* of British chart-work over two and a half centuries. The photo-litho-offset process is spectacularly successful in reproducing the pen-and-ink or wash of the originals (it is less kind to engraved work). Many charts from the eighteenth and nineteenth centuries (e.g. those of Bligh, Flinders, John Hunter, W. H. Smyth, F. W. Beechey and A. T. E. Vidal) display draughtsmanship of great distinction and beauty. Is the common artistry of naval officers in this period to be considered as an extension of visual and manual skills developed in the exercise of their profession, or as the product of training provided by drawing-masters of the Naval Academy?

Opposite each chart, the size, scale, reduction, and the correctness of its co-ordinates are stated; and captions supply notes on the surveyor, the circumstances of the survey, and the subject. Information is also (but not uniformly) given on the survey method and cartographic technique of the charts, but we may regret that there is not a fuller analysis of such matters as the stations occupied, the instrumental observations, the density and pattern of soundings, the symbols and topographical delineation, and the medium of the drawing.

Miss Blewitt of course does not fail to present the chart as an end-product of the process of survey (or, sometimes, compilation). In the examples reproduced we can trace the evolution of hydrographic practice from the running survey of Greenville Collins, with its meagre record of soundings, hazards, and navigation marks, to the planned trigonometrical operation of to-day, as represented by Admiral Day's chart of Berwick (1932). For background, Miss Blewitt's introduction briefly describes the procedure of an accurate survey; and in a three-page appendix Commander Naish digests, with great dexterity, the history of the instruments and ships used by marine surveyors.

In her longer essay on the history of British survey, Miss Blewitt fulfils the promise of her sub-title. The problems which perplexed the early navigator and chart-maker are discussed—longitude, magnetic variation, the convergence of the meridians; the reasons for the seaman's mistrust of charts, and the defects in his equipment and training, are analysed; we learn how and why charts failed to satisfy the needs of pilotage. This part of the essay is discursive, and there is some looseness of construction and expression. With more assurance the author describes the

reform of English hydrographic technique associated with Murdoch Mackenzie the elder and James Cook, and the steps leading to the establishment of an official chart repository. (Here reference might be made to the French prototype, often cited by contemporary English writers, e.g. John Green in 1753: 'we are able to reform Hydrography, as the French; provided any tolerable Encouragement was given to Artists...'.) The archives of the Hydrographic Department are drawn on for a documented and lively account of the office from its beginning under Dalrymple (to whose labours a discriminating tribute is paid) to its maturity under Beaufort. As Miss Blewitt remarks, 'the great period of British hydrography... coincided with the beginning of true scientific surveying'; perhaps it was a lucky chance that delayed the founding of the regular hydrographic office until a technological revolution and the application of correct survey methods had raised the sights: 'whereas Dampier had worried about degrees, the criterion was now [in Dalrymple's day] miles'. The fruits of Beaufort's administration, which extended Admiralty surveys to the shores of the world, are seen in the list of expeditions (1796 to 1855) printed by Miss Blewitt in an appendix.

The heroic age of British hydrography, from 1750 to 1850, rightly claims the largest share of the author's text as of her illustrations (54 out of 69). The eighteenth century had suffered much from the 'system-makers', denounced by Bougainville, who 'confine nature within the limits of their own invention'. Emancipation came from the exercise of applied sciences, including hydrography, dedicated to the patient accumulation of accurately observed facts. Dalrymple (no mean system-maker in his earlier days) uttered the manifesto of the new age with characteristic gusto: 'Precision is not to be expected in *Geographical Combinations; Surveys and Astronomical Observations* only can give Precision.'

The charts reproduced here enable us to follow the extension of scientific method in hydrography during this period. While Cook in the Pacific set new standards of accuracy and speed in exploratory running survey, the English coasts became a trying ground for the methods adopted by the successors of Murdoch Mackenzie. Not only was the coastal survey firmly braced to its framework of shore stations; the charting of the sea bottom was also elaborated and enriched. For the first time, the tools of the marine surveyor now matched those of the land surveyor, and both profited by the improvements made by British craftsmen in the design and construction of precision instruments. (But we may note that the *ideas* came from the men who used the instruments—that of enlarging the arc of the quadrant from Captain John Campbell, and that of the station pointer, apparently from the Mackenzies.) Graeme Spence's triangulation of the Scillies in 1791-2 (the diagram is reproduced on p. 109) gave a computed distance of 60,805 yards from St Agnes Lighthouse to St Buryan's Church; fifteen years later this was found to exceed by only 222 yards the figure obtained by the 'Grand Trigonometrical Survey' of the Ordnance, which used Ramsden's great 3 ft. theodolite. In the fine survey of Poole Harbour in 1785 by the younger Mackenzie and Spence (p. 103), the 'waterwork... surveyed by Sextant Angles' is full and precise; for taking horizontal angles and for off-shore fixes the compass was being supplanted by the sextant and station pointer.

As we leaf the pages of this book, many other generalizations come to mind: the historical role of the master in naval survey, the lessons learnt by the hydrographer from the land surveyor (Cook's style of drawing throughout his career was that which he had learnt from military engineers), the opportunism of commanders who did not fail to produce a careful chart while cutting out a port or making a raid on African slavers, their interest in antiquities, again comparable with that of military surveyors like Roy. Above all, we see the process by which the surveyor's skill steadily reduced the melancholy tale of shipwrecks and gave the seaman a better expectation of return from his voyage.

Miss Blewitt's book brings together in convenient (if costly) form a valuable fund of material for study. It lacks an index, and there are a dozen or so misprints, two of which have the merit of being funny—'the Public Relations Office' (*scil.* Public Record Office) and 'Boffin Bay'. The design, typography, and binding are of the highest quality, and the volume is a pleasure to handle as to read.

Late as the British were in setting up a hydrographic office, they have been even slower in writing its annals. (Here again the French are ahead.) The literature on the history of British

marine survey, to which Miss Blewitt has made a serious contribution, is still lamentably slight. The charting of the world by the Admiralty deserves to be worthily chronicled, and it is to be hoped that the projected History of the Hydrographic Department will not be long delayed.

R. A. SKELTON

SCHIFFSRISSE ZUR SCHIFFBAUGESCHICHTE. PART I. By R. HOECKEL. Burg bez. Magdeburg. 1957. 12 x 8 inches. 8 pages text and 17 plans. Price 15s.

Model-makers wanting precise drawings of new exercises for their skill should welcome these plans of German ships between 1597 and 1680, a small 'frigate' of the first date, a convoy-ship of Hamburg and four vessels of the short-lived navy of Brandenburg, including a yacht. The first, with very little modification, would make a very good *Mayflower*. The last, the 2-decker *Friedrich Wilhelm zu Pferde*, was reproduced in model form by Busley nearly 40 years ago and it is interesting to see the difference in the two designs in spite of their being based on the same known dimensions and the same contemporary painting. It can be said at once that the later version is very much the better. Busley's ship is, for instance, roughly 10 ft. longer and 1½ ft. wider. He assumed the foot used to have been equal to 314 mm., whereas Hoeckel takes it as 283 mm. (Amsterdam), and in this Busley was not necessarily mistaken, but he was certainly wrong in saying that length in those days was taken on the inner sides of the stem and sternpost at the waterline. This was noticed in the *M.M.* in 1922 (p. 254).

The plans, though small, are very clear and detailed. The last includes a layout of belaying pins etc. for a seventeenth-century ship. The names are naturally given in German, but since much of this must be variable and uncertain, the point is unimportant.

R. C. ANDERSON

H.M.S. *WARSPIRE*: THE STORY OF A FAMOUS BATTLESHIP. By S. W. ROSKILL. Collins. 5½ x 8½ inches. 319 pages; illustrations; maps; appendices; index. Price 25s. net.

'Famous old Lady,' wrote a petty officer to the author of this book, 'We who served in you will always have a weak spot for you!' No wonder: for the career of the seventh *Warspite*, which lasted from her first commissioning in 1915 under war conditions, until, stripped of her weapons, she ran on the rocks at Marazion on her way to the breaker's yard, was one of extraordinary hazard and fortune.

In the official battle-honours of the Royal Navy, the *Warspite*'s name has attracted the largest number of awards. They stretch from 'Cadiz, 1596' to 'Walcheren 1944', where the subject of Captain Roskill's narrative last fired her big guns. Compared with some of her sister-ships of World War II, she was everywhere, instead of only here and there. Her main armament was decisive at Narvik in 1940; it was heard with thunderous effect at Matapan; it turned the scale at Salerno, together with that of the *Valiant*; and it cheered the troops ashore at the Normandy landings. Nor did the ship escape hard knocks. She suffered much the most damage of her squadron at Jutland, which was her first fight; she was badly bombed off Crete in 1941, and again two years later, yet she always came back for more, though with the disconcerting habit of developing sudden trouble with her steering, to the alarm of her escorts.

The author himself served the ship as her gunnery officer, in a pre-war commission. His book is one of the best of its kind, for while it is not always rewarding to give a whole book to a single ship, it is so in this instance, since the *Warspite*'s adventures, and those of her predecessors (which are also described), were of exceptional interest. She is one of the best answers to the question of whether ships have personalities of their own. To quote Lord Cunningham of Hyndhope, who knew her well in peace and war: 'She always had a touch of feminine capriciousness about her. She was liable to take a dislike to her consorts and collide with them; she was not unknown to leave her proper element to taste the feeling of the land. She was always something of an anxiety

to those who commanded her; for she had a will of her own, and they never knew when she would take it into her head to do something quite uncalled for and unexpected, such as turning a complete circle on her own. She learnt that embarrassing manœuvre at Jutland, and never forgot it.'

The author of the official narrative of the War at Sea may be relied upon for accuracy in his broad picture of the events of the *Waspire's* long career. His book is also enlivened with a great deal of personal reminiscence, much of it amusing, and none of it irrelevant.

OLIVER WARNER

GHOSTS ON THE SEA-LINE. By A. A. HURST. Cassell and Co. Ltd. $8\frac{3}{4} \times 5\frac{3}{4}$ inches. 251 pages; frontispiece and 51 half-tone illustrations. Price 30s.

This is an account of life before the mast in the last big cargo-carrying deep-water square-rigged ships; those few that had managed to survive into the period between the two great wars of this century. The vessels, nearly all old British and German four-masted barques, were then mostly owned by Finns and were registered at Mariehamn in the Baltic. Fine smart ships in their day, but they had fallen on evil times; poorly found, undermanned, and it seems with little discipline, and with only one trade still open to them: the carriage of grain from Australia to Europe.

In spite of their defects the author obviously loved the old ships and the ways of sail. Throughout the book there are numerous descriptions of the ships under sail; a sight of which he never tires. Having lived as a youngster at Gravesend he remembers the days when many fine sailing vessels were to be seen in the London River. He describes an occasion on which he was in a tug towing a big square-rigger to sea and dropping the tow at about midnight. 'The tug ran ahead and hove in her wire while the barque dropped the pilot into the cutter. Then suddenly, for there was no sound at all in the still night, I was aware of the whole fabric of the ship slipping past us barely a biscuit's toss away without even a hiss from her cutwater.... Never until that moment had I realized how silent a sailing ship could be and my resolve to go to sea became immutable.... the fascination of a ship under canvas was brought home to me to the full, and I was never disillusioned in the years that followed for so long as I stayed in sail.'

The book is not written as a continuous story. It is really a series of yarns of the last days of sail; voyages round the Cape to Australia in ballast and home round the Horn with cargoes of wheat. Much is told in rather a disjointed manner, as is often the case with sailors' yarns, and there is a certain amount of repetition. The photographs are excellent and are probably the book's chief contribution to nautical research.

Most seamen, no doubt, will agree with the author in his opinion that the main-skysail-yard full-rigged ship was the best-looking vessel of any age. We can also be glad that he does not use the term 'windjammer' for *all* square-rigged ships. He describes the sailor's work aloft and how much more interesting it was than that of the steamship seaman. Also the far greater opportunity there was in sail for observing the animal life of the oceans; to catch sharks, sea birds, etc.

Although the names of a few of the Finnish ships are mentioned, the author does not give the names of those in which he sailed nor of other sailing vessels sighted or in company. One yarn is of some unusual events in a ship's career and of her loss, but no name is given. This is also a defect in the many fine photographs of ships and their gear in the book; the vessels are nameless. One would like to know the name of the dismasted ship in the photograph facing page 192, and that of many of the other ships shown.

There are in the book expressions and terms that sound strange to anyone used to British ships. Such as 'loosed off' instead of 'loosed' sail; working 'in the rig' instead of working 'aloft'; and 'squared right up' instead of 'with square yards'.

A technical error occurs on page 113 where the author mentions 'reeving off a new clewline on the mizzen upper topgallantsail'. He must have meant *lower* 't'gan'sl, as the upper sail has no clewlines; it has downhauls. Some of the statements about the tallships seem rather tall themselves. For instance, the author's ship passed another sailing vessel 'weather side to weather side'. How could this be done? Another is of a ship bound south in the Bay of Biscay and being blown back to the *north of Iceland* and a temperature of 30 below zero! and one is of a ship apparently bound

to the eastward round Cape Horn (p. 217) sighting Staten Island and *then* the Horn: surely this is in the wrong order.

The author is perhaps a little unfair in writing of what he calls 'the appalling manners of the average British ship', and goes on to complain that one of them had made no effort to salute the sailing ship by blowing the whistle when passing her at anchor in a harbour. Blasts on the whistles are not a usual method of salute by British ships, particularly in harbours and narrow waters, where such sounds have special rule-of-the-road meanings.

In addition to the many excellent photographs of ships, there is a diagram showing the names of the sails of a four-masted barque and a small chart of the world showing the usual routes of the last of the wind ships. There is also a glossary of sea terms.

This book, written by one who so obviously loves his subject, is really one more lament at the passing of sail. The author, like many another old sailor, may well say that he gives thanks that he has 'seen the loveliness of those splendid ships'.

C. H. WILLIAMS

IMAGO MUNDI. A REVIEW OF EARLY CARTOGRAPHY. Edited by L. BAGROW. Vol. XIII. Henry Stevens Son and Stiles. 1956. $11\frac{3}{4} \times 7\frac{1}{2}$ inches. 193 pages. No price given.

The thirteenth annual volume of *Imago Mundi* is the tenth to be issued from Stockholm, where the late editor resided and worked. The revival and continuation of this valuable Review after the last war owed much to the then Crown Prince, now King Gustav, of Sweden. It is appropriate therefore that this number is dedicated to him, and carries a fine portrait of His Majesty.

For all who are interested in old maps and charts *Imago Mundi* is a fascinating and indeed indispensable production. Every article is lavishly illustrated with facsimiles of rare and manuscript maps, in half-tone or line, Dr Bagrow's own article, for example (*Italians on the Caspian*) has seven full-page maps, and two in the text. Mariners will find one of these of particular interest, for it shows a large square-rigged ship of about 1375, drawn by a famous Jewish compass- and chart-maker of Majorca. Then, too, there is a Japanese map of the Nagasaki water-front, drawn a little more than a century ago, in which appear the first steamships to visit Japan. They were part of a Russian fleet, but one, a frigate, had been purchased from England.

Two articles, one by Mr True of Miami, the other by Professor Arthur Davis, of Exeter, deal with unsolved problems of the Cabot voyages, while the present reviewer contributes a transcript of a letter from Mercator to John Dee which bears on the latter's attempt to claim an arctic empire for the first Elizabeth. Of particular maritime importance, however, is the paper by Dr Heinrich Winter, of Berlin, on *The Origin of the Chart*. This is a subject on which he writes with authority. Here he considers afresh the three nautical instruments engraved on the world charts of 1527, 1528 and 1529 drawn by the famous technician Diego Ribero. One of these is a mariner's astrolabe, another a mariner's quadrant, while the third, a compass rose on a circular plate having features in common with the dorsum of an astrolabe, has hitherto not been explained. It is drawn so that its horizontal diameter coincides with the equinoctial line or equator of the map, while the vertical diameter reaches precisely from the tropic of Cancer to the tropic of Capricorn. A day-to-day calendar of the year, with corresponding positions of the sun in the signs of the Zodiac is set round the plate in correct relation to these three astronomical lines. If the date is known, an approximate value for the solar declination can therefore be read off by stretching the dividers to a neighbouring meridian on the map, which is divided into degrees. It is, in fact, an 'abacus for the declination', presumably intended for pilots not possessing a book of tables. Dr Winter has omitted to notice that the principle of construction of an instrument of this type, as given by contemporary Portuguese nautical writers, has been set out both by Fontoura de Costa and by S. G. Franco. Neither, however, had recognized its portrayal on the charts of Ribero, himself a professional instrument maker. The accompanying legend on the map, which is transcribed by Armando Cortesão in his magistral *Cartographia e cartógrafos portugueses*, makes the whole matter clear.

E. G. R. TAYLOR

The following other publications of the Society are at present available for sale:

OCCASIONAL PUBLICATIONS: No. 5, *Lists of Men-of-War, 1650-1700. Part I. English Ships*. Compiled by R. C. Anderson. *Part II. French Ships*. Compiled by Pierre Le Conte. *Part III. Swedish Ships*. Compiled by Hj. Börjeson. *Danish-Norwegian Ships*. Compiled by P. Holck. *German Ships*. Compiled by W. Vogeland H. Szymanski. *Part IV. Ships of the United Netherlands*. Compiled by A. Vreugdenhil. *Part V. Indexes*. EACH PART 3s. 6d. (POSTAGE 5d.) No. 6. A Treatise on Shipbuilding and a Treatise on Rigging written about 1620-1625. Edited by W. Salisbury and R. C. Anderson. 15s., to members 12s. 6d., POSTAGE 4d.

THE MARINER'S MIRROR. INDEX TO VOLS. 1-35. Compiled by R. C. Anderson. Price 15s. (Members' rate 10s. 6d., POSTAGE 10d.).

REPRINTS: *The Rye River Barges*, by Leopold A. Vidler.

East Cornish Luggers, by H. O. Hill.

The Fishing Luggers of Hastings, Parts I and II (separately), by James Hornell.

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MARITIME MISCELLANY SERIES, No. 1, *The Van de Veldes*, by W. Voorbeytel Cannenburg. No. 2, *Piracy*, by Philip Gosse. Price 2s. No. 3, *The Anchor*, by J. W. van Nouhuys. No. 4, *Old Maritime Prints*, by A. G. H. Macpherson. No. 5, *The Timber Problem of the Royal Navy, 1652-1862*, by Robert G. Albion. Price 2s. No. 6, *The Fighting Ship from 1860 to 1890*, by Admiral G. A. Ballard. No. 7, *The King's Flags*, by Cecil King. No. 8, *The History of Maritime Law*, by William Senior. Price 2s. No. 9, *The Development of Signalling in the Royal Navy*, by Captain L. E. Holland, R.N. No. 10, *The Ship of the Renaissance*, by R. Morton Nance. Price 5s. No. 11, *Rig in Northern Europe*, by Sir Alan Moore, Bt. Price 5s. No. 12, *Merchantmen under Sail 1885-1932*, by the late Basil Lubbock. Price 5s.

(Each, price 2s. 6d. except where otherwise stated.)

PLANS: Model-maker's Plans of the *Victory*, 10 plans on 3 sheets from those used in the restoration of 1923-35. (Price 21s.)

Enquiries for any of these should be addressed to The Hon. Secretary, Society for Nautical Research, National Maritime Museum, Greenwich, S.E. 10.

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